iNetVu™ 7000 Controller User Manual

Work In Progress

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1-877-iNetVu6
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Revision 1.19

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FCC and INDUSTRY CANADA INFORMATION TO THE USER:
The FCC and Industry Canada have imposed the following conditions when operating, installing and deploying iNetVu™ Mobile Earth Stations and is mandatory for all installations made within the Continental United States and Canada as well as Hawaii, Alaska, Puerto Rico, the U.S. Virgin Islands and other U.S. Territories. The FCC requires that a certified installer perform the installation. It is also strongly recommended that a qualified professional RV dealer/installer mount the system on your vehicle. These conditions are also required by C-COM for all other installed locations.

All iNetVu™ Mobile earth station installers must be C-COM Certified, and must have specifically acknowledged the requirements for iNetVu™ Mobile installations, which are as follows:

1. “Installation” is the physical mounting and wiring of the Satellite provider’s earth station on a vehicle or other stationary site in order to prepare for correct operation. Only Certified C-COM iNetVu installers may perform the installation and removal of an iNetVu™ Mobile system.
2. “Deployment” means the raising, pointing and orienting of the earth station to the communicating satellite, every time it is raised from a stowed position for use. The deployment of an iNetVu™ Mobile system must only be done by a trained installer or by a consumer using the deployment software.
3. Installers shall install the iNetVu™ systems only in locations that are not readily accessible to children and in a manner that prevents human exposure to potential radiation hazards.
4. For large vehicles with roof mounts, the height of the bottom lip of the earth station when fully deployed must be at least six feet above the ground at all times, or six feet above a surrounding surface which a person may easily access.
5. If a roof access ladder or any other means of access to the roof is installed on the vehicle, then the ladder or access must be blocked by a suitable rope or other barrier while the earth station is deployed or in operation. The installer must provide this rope or barrier directly to the end user at the time of installation and advise the user to use it at all times when the earth station is deployed or in operation. Warning signs shall also be provided by the installer to the end user to be posted on th improper installation or due to the failure to provide required information to the end user.
6. Installers and end users will be deemed directly liable for any damages resulting from either of their failure to comply with the above rules. These rules are meant to ensure that extraordinary precautions and measures are used to prevent satellite interference or exposure to harmful radiation. C-COM reserves the rights to immediately **suspend without liability or previous notice** the operation of the earth station upon detection of a deviation from its installation or operational requirements until the deviation is corrected. In addition, C-COM reserves the right to suspend or cancel the Installer Certificate of any installer that has not fully complied with these installation requirements.
7. Further, the installer and end user may be directly liable for any damages resulting from any change undertaken by either of them. Including but not limited to, any modification of any part of the hardware, software, specific operational

frequencies, the authorized satellite, or the size or other characteristics of the earth station supplied to them by C-COM or C-COM's authorized representatives. e rope or other barrier warning all persons not to attempt to access the roof of the vehicle while the earth station is deployed or in operation.

8. Warning signs shall be posted at prominent locations on the earth station informing all persons of the danger of harmful radiation from the earth station while it is deployed or while in operation.
9. The iNetVu™ Mobile system may only be operated when the vehicle is stationary.
10. The installer must inform the end user that the vehicle must be stabilized during the transmission, to prevent movement of the vehicle for any reason, including movement of persons on or off the vehicle, or high winds. The installer shall advise the end user how to appropriately stabilize their vehicle.
11. Installers shall be liable for all damages if they fail to comply with the above mandatory conditions. This includes, but is not limited to damages caused by

Note 1:
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with this instruction manual, may cause harmful interference with radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio / TV technician for help.

Note 2:
This Class B digital apparatus complies with Canadian ICES-003.

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Revision Notes

The table below records the current version status of this document and any changes from the previous versions.

Rev.	Date	Edited By	Description
1.10	May 1, 2008	A. Cheikhali	Document Creation
1.11	May 14, 2008	A. Cheikhali	Web Interface Added
1.12	May 26, 2008	A. Cheikhali	Appended Procedure
1.13	May 29, 2008	A. Cheikhali	Removed SW/LCD configuration from appendix to Service Manuals
1.14	June 16, 2008	A. Cheikhali	Updated Captions to latest release
1.15	August 5, 2008	A. Cheikhali	Released with 7.1.5.0
1.16	September 25, 2008	A. Cheikhali	Released with 7.1.6.0
1.17	September 30, 2008	A. Cheikhali	System diagram with splitter added
1.18	October 10, 2008	A. Cheikhali	Buttons in 7000 Maintenance Renamed
1.19	December 18, 2008	A. Cheikhali	Viasat and Flyaway added.

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1. Introduction

The iNetVu™ 7000 Controller is a one-box, one-touch solution for satellite auto-acquisition. Designed to interface with a number of Satellite Modems, iNetVu™ VSATs, and DVB-S Receivers, the iNetVu™ 7000 Controller is an easily configurable and operated antenna controller unit.

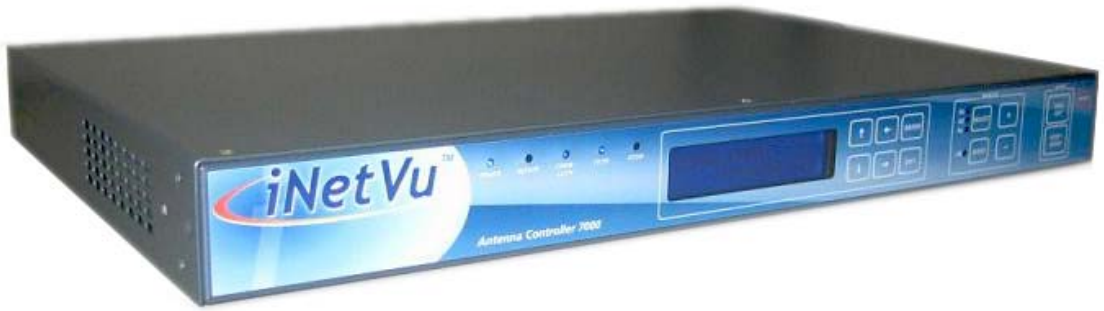


Fig. 1: iNetVu™ 7000 Controller

The iNetVu™ 7000 Controller is a fully functionally and configurable straight off the box solution. No PC or monitor required! An I/O GPS Module inside, a DVB-S Tuner, an onboard LCD displaying real-time system status, and a Keypad Navigator, makes using the iNetVu™ 7000 Controller extremely simple.

The iNetVu™ 7000 Controller along with any iNetVu™ platform can work as a complete stand-alone unit. No modem or RF splitters are required for satellite acquisition. The LNB can be powered straight from the controller.

Equipped with a 32-Bit Micro-Controller, the iNetVu™ 7000 obtains extremely precise readings from all axes resulting in quicker and more reliable satellite acquisition time.

The 7000 Controller is compatible with iNetVu™ legacy systems in the field. Existing users can easily upgrade to this new controller.

2. Specifications

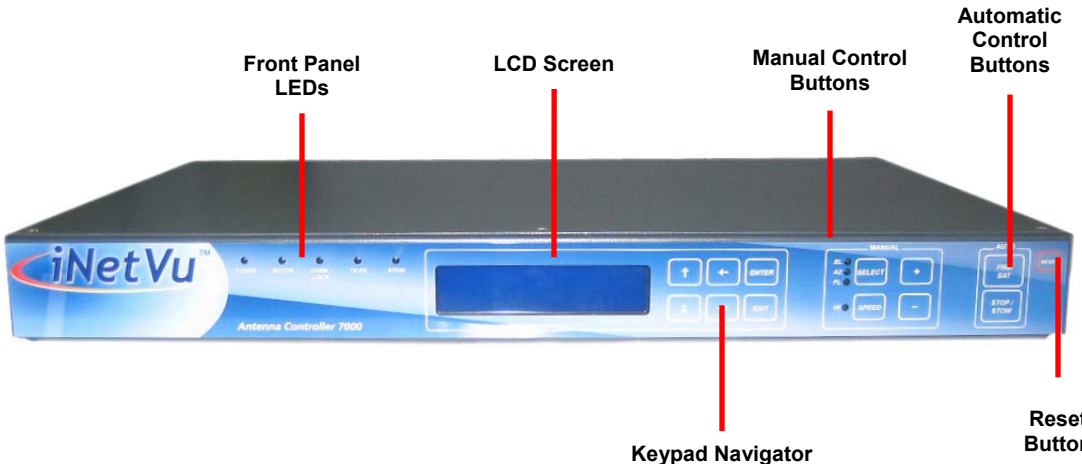
Dimensions: Width :17.1” x Depth:11.0” Height : 2.0”
Weight: 9.9 lbs (4.5 kg)
Operating Temperature: -20°C to +50°C
Elevation Output: 12VDC, 12 A (Max.)
Azimuth Output: 12VDC, 12 A (Max.)
Polarization Output: 12VDC, 3 A (Max.)
Universal AC Input: 90 – 264 VAC, 1.1 –2.2 A, 47 – 63 Hz
Motor Control Connector: 9 Position Circular AMP Connector
Signal Input: Female DB26 Connector
GPS Connector: SMA (Sub-Miniature Version A)
Rx Connector: Type F RG6
PC Interface: USB Interface
Network Interface
Serial Interface
Web Interface
Front Panel Interface: Automatic and Manual Control Keypad
LCD Screen and Keypad Navigator

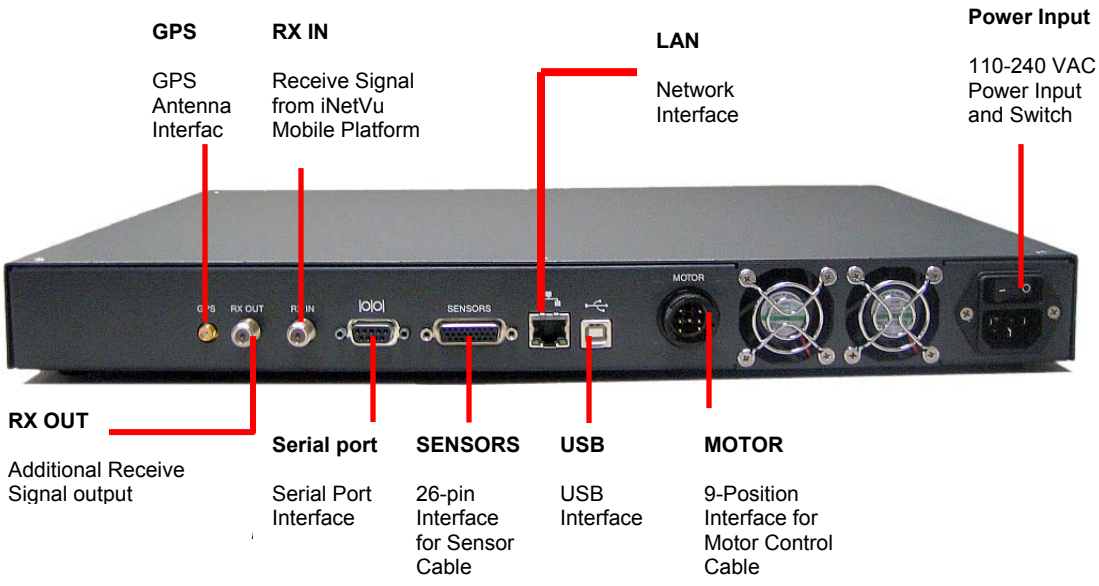
Tuner Specifications

RF Input Range: 950MHz to 2150MHz
Input Dynamic Range: -75dBm to –25dBm
Input/Output Impedance: 75 Ω
Symbol Rate: 1 to 45Msps

Item		Specification				Condition
		Min	Typ	Max	Unit	
Frequency		950		2150	MHz	
Return Loss		6	10		dB	950MHz to 2150MHz
Noise Figure			6	10	dB	Maximum Gain
Loop Through Gain		-2.0		4.0	dB	
Input Dynamic Range		-75		-25	dBm	
IMD3		40			dBc	Desired & undesired input Level are -25dBm
Local Leakage			-80	-70	dB	950MHz to 2150MHz
Phase Noise	10KHz		-84		dBc/Hz	
	100KHz		-105		dBc/Hz	

3. Physical


Front Panel LEDs
LCD Screen
Manual Control Buttons
Automatic Control Buttons
Keypad Navigator
Reset Button


GPS
GPS Antenna Interfac
RX IN
Receive Signal from iNetVu Mobile Platform
LAN
Network Interface
Power Input
110-240 VAC Power Input and Switch
RX OUT
Additional Receive Signal output
Serial port
Serial Port Interface
SENSORS
26-pin Interface for Sensor Cable
USB
USB Interface
MOTOR
9-Position Interface for Motor Control Cable

4. Typical Connection Configuration

The typical connection configuration for each service will be the same regardless of the Satellite Modem / VSAT. However, the configuration parameters for Satellite Modem / VSAT Communication will differ depending on service. See iNetVu^{TM} System Manual for configuration procedures corresponding to the service used.

4.1. Typical Network Interface Connection

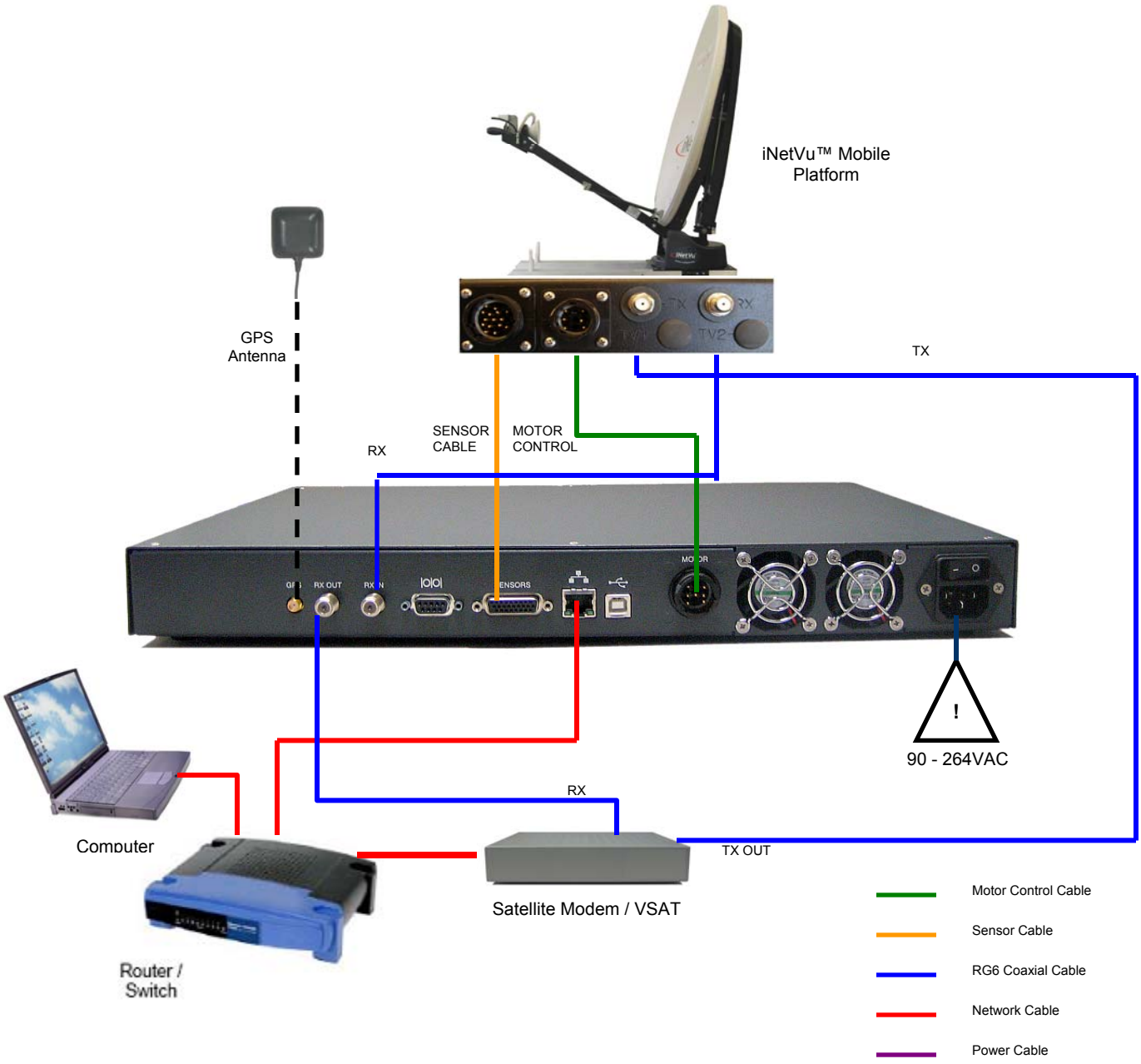


Fig. 3: iNetVu™ 7000 Controller Typical Connection Configuration

4.2. Typical USB Communication Interface

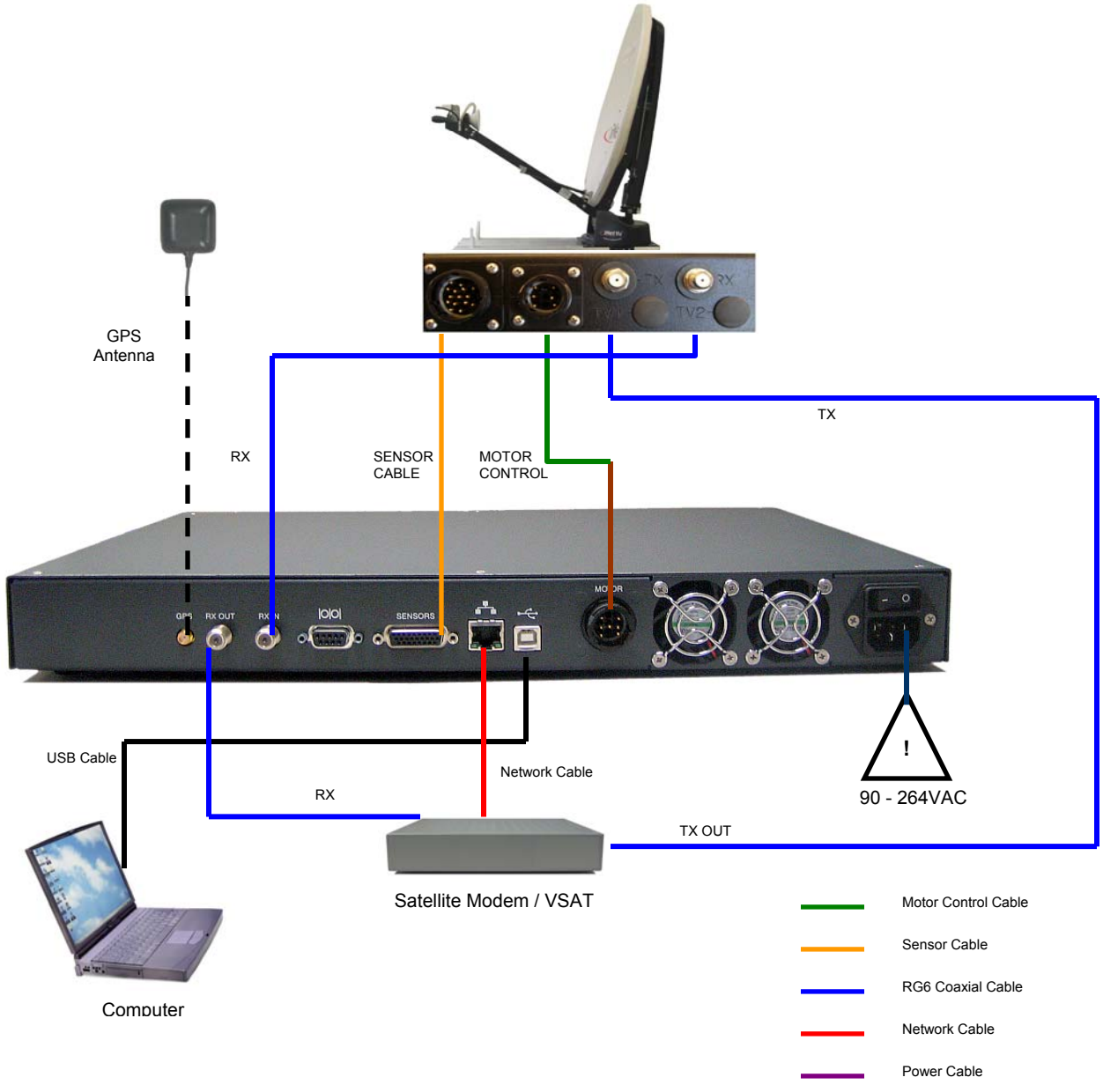


Fig. 4: USB Configuration Interface

4.3. Typical Connection – PC Free

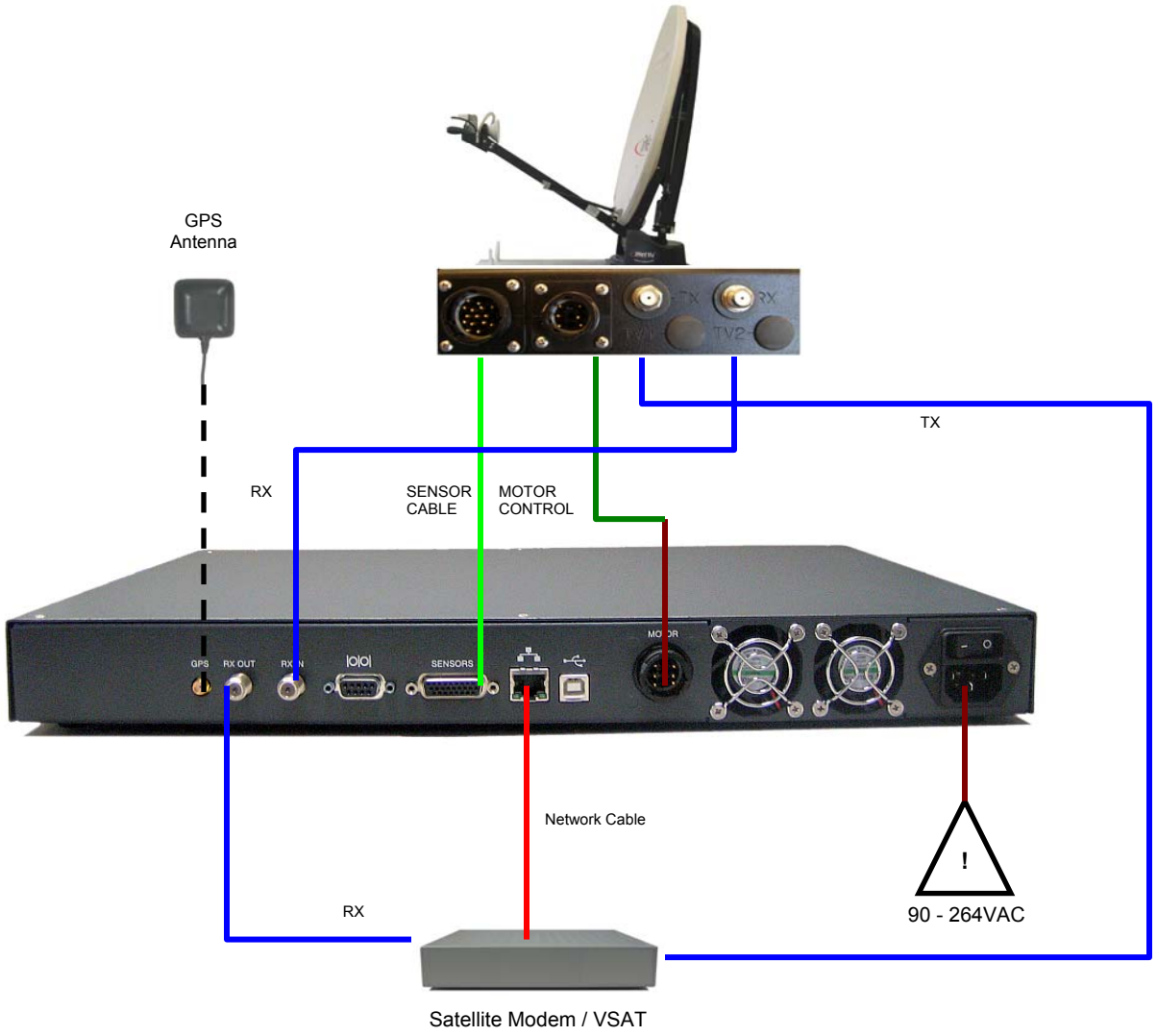
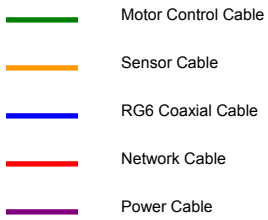
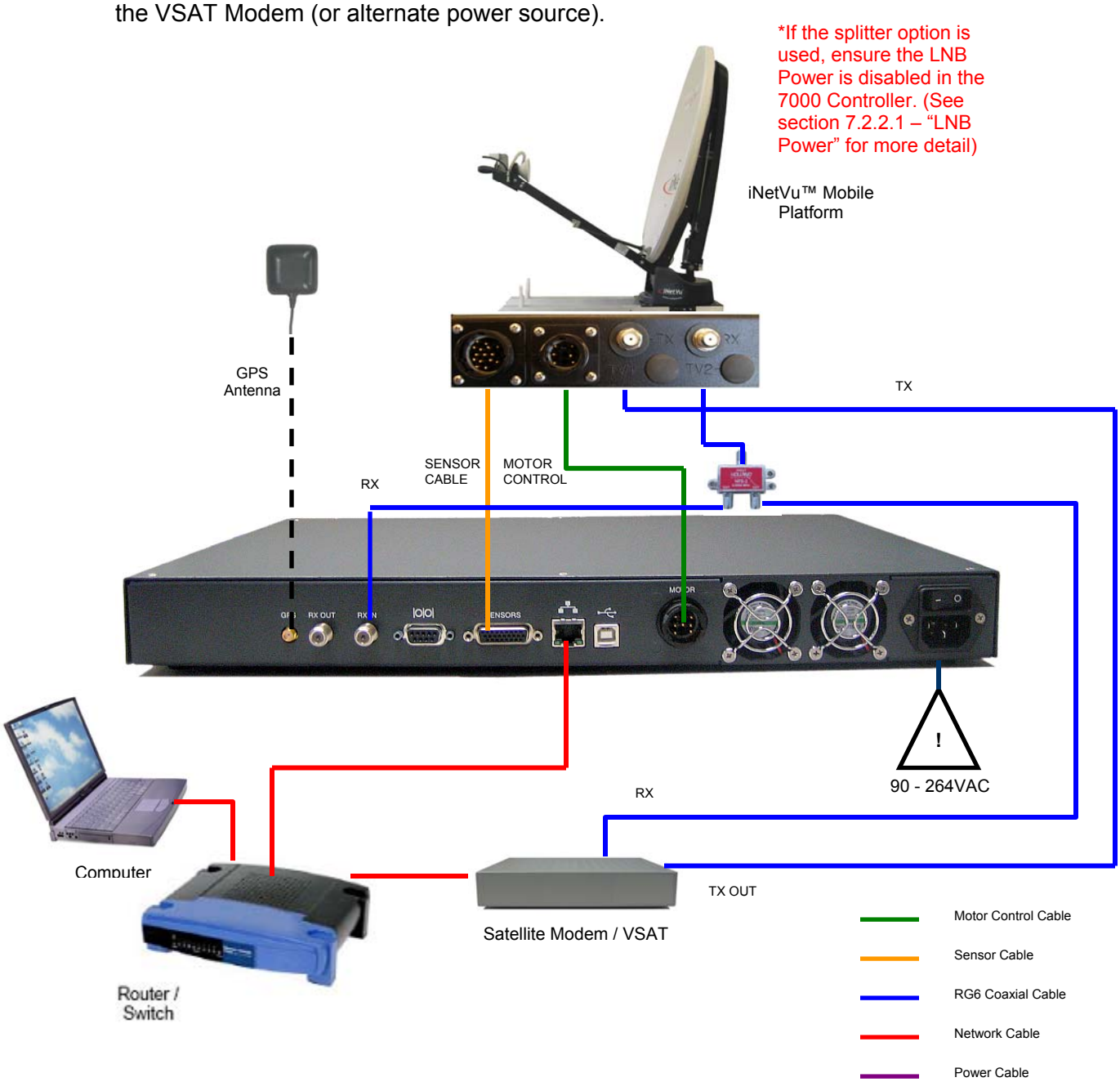


Fig. 5: iNetVu™ 7000 Controller PC Free Connection Configuration



4.4. System Diagram with Splitter

***Please Note**: Using a splitter is optional. If the user does not wish to power the LNB from the Controller, a splitter must be used such that power is passed to the LNB from the VSAT Modem (or alternate power source).



5. Installation

The iNetVu™ 7000 Controller is shipped pre-configured and calibrated with the iNetVu™ Mobile Platform and service which you plan to use. Only configuration of the Satellite Modem / VSAT Communication parameters and the satellite you wish to find is required.

5.1. Rack Installation

The iNetVu™ 7000 Controller includes attachable “ears” which make the iNetVu™ 7000 Controller configurable for rack-mounted installation.

If you are installing the iNetVu™ 7000 Controller onto a rack, ensure that you use supporting rails or a shelf to support the weight of the iNetVu™ 7000 Controller, and use the provided “ears” to fasten the unit to the rack face.

5.2. Setup

1. Connect all of the cables and components as depicted by the previous section. Select connections that are best suited for your application.

2. Power on the iNetVu™ 7000 Controller.

3. Set your external PC to the same subnet as the iNetVu™ 7000 Controller (Default IP Address of the 7000 is 192.168.0.2)

4. Refer to the appropriate Service Manual for service based system configuration via LCD or software, depending on the service used.

5.3. Existing iNetVu™ Mobile Platform Installation

If you are replacing an existing iNetVu™ Series Controller with an iNetVu™ 7000 Controller, you will need to perform an Azimuth and Polarization Calibration and set the iNetVu™ Mobile Platform ID prior to searching for satellite.

Once you have completed the initial setup and configuration procedure stated above, access the iNetVu™ 7000 Controllers Software (This can also be completed through the LCD keypad – note: only one method is required)

Software Method

1. Navigate to the Maintenance Screen by right clicking on the iNetVu™ icon at the bottom-right of the Windows screen and selecting “Maintenance”.

2. Click “Calibrate AZ”, and IMS will begin the Azimuth Calibration Function. Verify that there are no obstructions that would impede a full Azimuth sweep.

3. After this is complete, navigate back to the Maintenance Screen.

4. Click “Calibrate PL”, and IMS will begin the Polarization Calibration Function. Verify that there are no obstructions that would impede a full Polarization sweep.

5. After this is complete, navigate back to the Maintenance Screen.

6. Enter your iNetVu™ Mobile Platform Serial Number into the “Platform SN” field and click “Save”. The iNetVu™ Mobile Platform Serial Number will be found on your iNetVu™ Mobile Platform and ONLY THE LAST 4 DIGITS should be entered.

7. Re-open the IMS software.

8. Verify that your iNetVu™ Mobile Platform Serial Number has been saved by navigating to the About Screen.

LCD Method

1. Advance to the Operations menu using the ‘←’ and ‘→’ arrows on the keypad.

2. Advance to “AZ_C” using the ‘←’ and ‘→’ arrows and press the “Enter” key on the keypad. IMS will begin the Azimuth Calibration Function. Verify that there are no obstructions that would impede a full Azimuth sweep. Confirm the pot and zero factors when prompted and save.

3. After this is complete, go back to the Operations menu by pressing the “Exit” button to navigate backwards.

4. Advance to “PL_C” using the arrows and select the “Enter” key on the keypad. IMS will begin the Polarization Calibration Function. Verify that there are no obstructions that would impede a full Polarization sweep. Confirm the pot and zero factors when prompted and save.

5. After this is complete, navigate to the “Config” menu from the keypad. The “Exit” button on the keypad can be used to navigate back to the original menu, and the “Enter” button will allow the user to enter into a menu.

6. Navigate to “C&P” in the configuration menu and select the “Enter” button on the keypad.

7. A screen containing RF and Platform Data will appear. Navigate to the far bottom right section of the screen where the platform description appears (i.e. A12B for 1.2 mobile unit), and click on the ‘↑’ arrow once. This action will allow you to make modifications to that section.

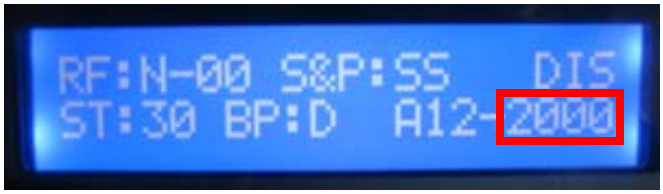


Fig. 6: C&P Screen from Configuration

8. Next to the dish size (i.e. A12B, etc.), there exists a 4-digit platform serial number as outlined in the figure above. Change this number to the iNetVu™ Platform Serial Number by using the ‘→’ to advance between digits, and the ‘↑’ or ‘↓’ to change the value of the digit. The iNetVu™ Mobile Platform Serial Number will be found on your iNetVu™ Mobile Platform and ONLY THE LAST 4 DIGITS should be entered.

9. Click the “Enter” button on the keypad once the serial number has been entered, and exit the configuration menu by click the “Exit” button twice. One time to return to the configuration screen and one more time to exit the configuration screen.

10. Once prompted if you would like to save the configuration, press the ‘↑’ button such that ‘Y’ is selected for “yes”, and press, “Enter”.

That’s it. You have successfully completed the installation and setup of the iNetVu™ 7000 Controller and are ready to find satellite.

6. iNetVu™ Front Panel Operation

6.1. LED Definition

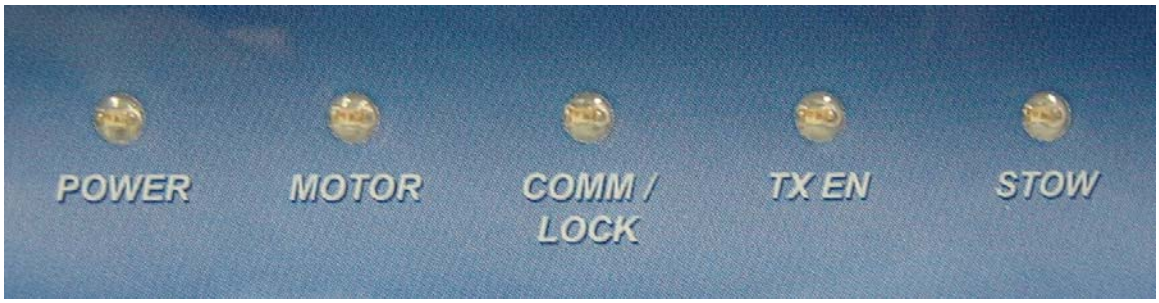


Fig. 7: iNetVu™ 7000 Controller Front Panel LED Panel

POWER

Solid light indicates power is ON.

MOTOR

Flashes when any of the three motors are instructed to move.

COMM / LOCK

Indicates Communication between Controller and Modem

Slow blinking (2 sec. intervals) indicates no communication.

Slow blinking (1 sec. intervals) indicates idle communication.

Fast blinking (1/4 sec. intervals) indicates that command is being executed

Solid Light indicates lock on Satellite.

TX EN

Solid Light indicates transmitter has been enabled.

STOW

Solid Light indicates iNetVu™ Mobile Platform Elevation Axis (EL) is in the stowed position.

6.2. Manual and Automatic Controls Button Operation

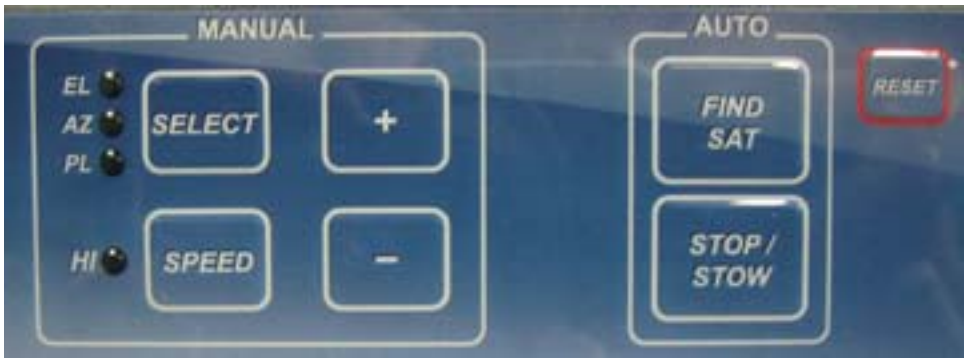


Fig. 8: iNetVu™ 7000 Controller Front Panel Buttons

How to Find Satellite

Press “FIND SAT” Button.
iNetVu™ Mobile Platform will automatically attempt to locate, lock, peak and enable the system onto the configured satellite.

How to Stow the Antenna

Press “STOP/STOW” Button, and hold for 2 seconds.
iNetVu™ Mobile Platform will automatically re-center itself and lower into the stow position.

How to Stop

Press “STOP/STOW” Button (do not hold). Stops all ongoing operations such as motor movements and automatic functions like Find Satellite and Stow.

How to Manually Move the Mobile Platform

Press “SELECT” to select the axis of motion you wish to move. The LED corresponding to the axes chosen will light up. Press “SPEED H/L” to select the speed (LED ON – HI, LED OFF - LOW). Press and release “+” and “–“ for short duration movement & angle readings. Press and hold “+” and “–“ for long duration movement. **Warning**: User must watch antenna limit sensors (EL UP/ST, AZ ST, PL ST) when using manual controls. See LCD ‘Monitor’ section explanation for more details.

How to Turn ON/OFF the Controller

Turn off the power switch on the back panel of the iNetVu™ 7000 Controller.

How to Reset the Controller

Press “RESET” Button
Power-cycles the iNetVu™ Controller
DOES NOT reset default values

6.3. LCD Screen and Navigator Keypad Operation

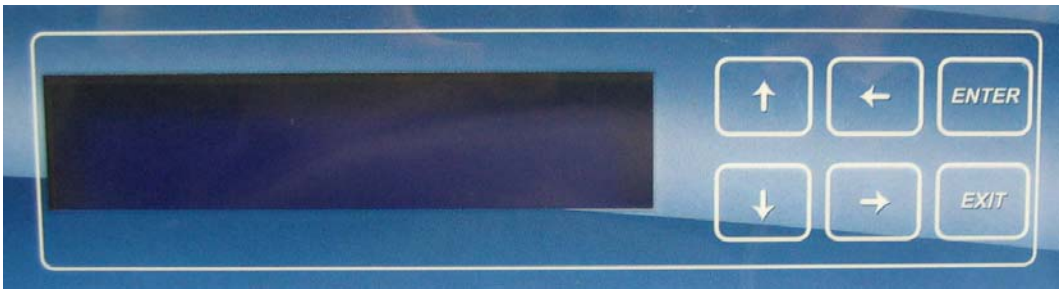


Fig. 9: iNetVu™ 7000 Controller LCD and Keypad Navigator

↑ ← ↓ →

Used to move the cursor position.

ENTER

Used to select a displayed function

EXIT

Used back out of a selection and return the display to the previous selection

6.4. Front Panel Menu Navigation Tree

The following is a tree consisting of a list of the menu options available with the LCD interface.

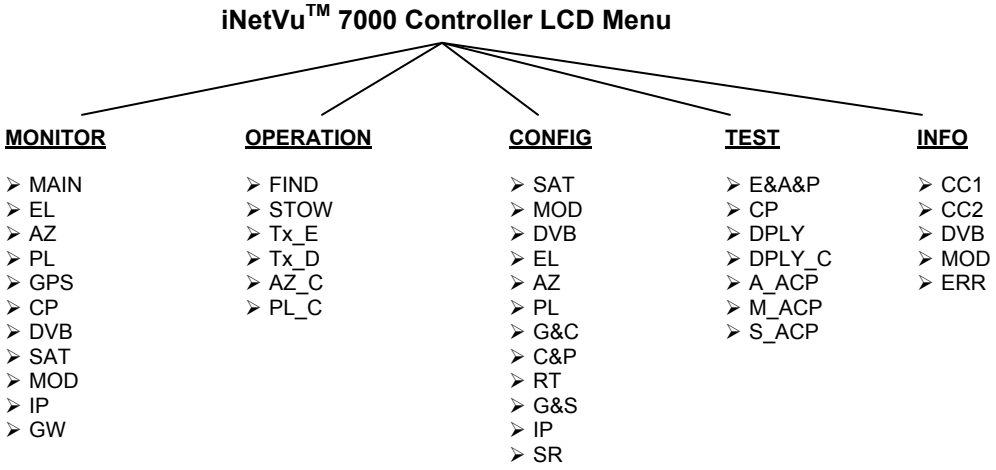


Fig. 10: iNetVu™ 7000 Controller LCD Menu Options

***Note:** In order for the user to make changes to configuration data in a sub-category of the "CONFIG" menu, or apply changes to data in a sub-category of the "TEST" menu, the '↑' button on the keypad must be pressed above the data portion in the sub-category before changes can be made.

For example, if the user wishes to change the longitudinal value of the satellite position in the SAT subcategory of the "CONFIG" menu. The steps involved include:

1) Navigating to the 'CONFIG' menu on the main screen using the '→' button.

2) Press the "ENTER" button once the cursor is above the 'CONFIG' menu.

3) At this point, the user should be in the 'CONFIG' menu and can select any of the sub-categories available. Press the "ENTER" button once the cursor is above the 'SAT' sub-category.

4) To change the longitudinal coordinate of the target satellite, navigate to the area of where this information is located, and press the '↑' button once to enable modification.

5) At this point, the user can change the character values of the longitudinal coordinate by using the '↑' and '↓' buttons. The '→' and the '←' buttons can be used to navigate between characters.

6) Press the "ENTER" button once complete.

6.5. Opening Screen

When powering the iNetVu™ 7000 Controller, the LCD will display the following during the initial boot-up sequence.

Fig. 11: LCD Opening Screen

6.6. Main Menu

The iNetVu™ 7000 is ready for usage when the following is displayed on the LCD.

There are Five (5) Main Menu items to select from: **MONITOR**, **OPERATION, CONFIG, TEST, and INFO**.

Fig. 12: LCD Main Menu

MONITOR	This menu branch allows the user to monitor the status of the iNetVu Mobile Platform, its components, and displays information concerning the iNetVu 7000 Controller and the Satellite Modem / VSAT.
OPERATION	This menu branch allows the user to perform miscellaneous functions, such as enabling/disabling the transmitter, Find Satellite, Stow, and perform axes calibrations, etc.
CONFIG	This menu branch allows the user to configure the iNetVu™ System, including platform, modem parameters, and controller.
TEST	This menu branch allows the user to run demo test on all three axes, as well as check/test compass, deploy the antenna, and ACP testing.
INFO	This menu branch allows the user to verify the 7000 controller / modem settings, such as software versions, hardware versions, DVB module, and error codes.

6.6.1. MONITOR

This section describes briefly what each item and menu represents. For a more detailed explanation of each menu, see the configuration section of this manual. (Section 6.6.3)

Fig. 13: Monitor Menu

MAIN	Displays real-time system status and receive signal.
EL	(Elevation) Displays real-time current drawn and speed settings for the elevation motor, as well as real-time elevation angle and limits, offset, window size, and Elevation adjustment gap.
AZ	(Azimuth) Displays real-time current drawn and speed settings for the azimuth motor, as well as real-time azimuth angle and limits, window size, pot factor, and zero factor.
PL	(Polarization) Displays real-time current drawn and speed settings for the polarization motor, as well as real-time polarization angle and limits, window size, pot factor, and zero factor.
GPS	Displays GPS Status and coordinates.
CP	(Compass) Displays compass status, compass elevation angle reading, and 4-point compass readings.
DVB	(DVB Tuner) Displays the DVB Tuner's operating frequency, symbol rate, and code rate. This branch also contains the frequency, symbol rate, and code rate of a reference transponder.
SAT	(Satellite) Displays Target Satellite longitude and the antennas target coordinates. This branch also contains longitudinal coordinates of a reference satellite used for searching.
MOD	(Modem) Displays Modem Parameters.
IP	Displays IP of iNetVu 7000's Ethernet Port, and the VSAT modem.
GW	(Gateway) Displays Subnet, and Gateway IP.

6.6.1.1. MAIN

This branch menu displays the real-time Elevation, Azimuth, Polarization Angles, their respective limits (Up, Down, Stow), the RF Receive Signal, Signal Strength, and the System Status.

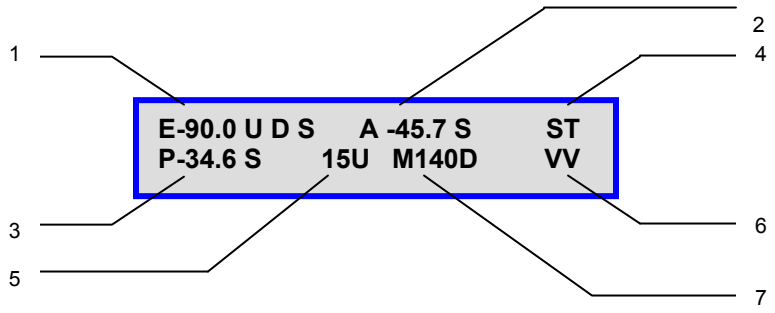


Fig. 14: "MAIN" (Main) Display

1 – Elevation Angle and Limit Indicators

Ka66/740/950/980 Mobile Platform Range:	-90.0° to 65°+
1200/1800 Mobile Platform Range:	-90.0° to 75°+
1.2m Flyaway Antenna	5.0° to 80°

Elevation Angle will be –90.0 when the Elevation Stow Indicator is ON for mobile units

U Elevation Up Limit has been reached.
Typically set above 75° for 1200 Mobile Platforms, and above 65° for 740/950/980 Mobile Platforms.

D Elevation Down Limit has been reached.
Typically set between 5° and 10° for 1200 Mobile Platforms and between 0° and 10° for Ka66/740/950/980 Mobile Platforms.

S Elevation Stow Limit has been reached.

2 – Azimuth Angle and Stow Limit Indicator

Range: -200° to +200°
Flyaway Range: ±75°

S Azimuth Stow Limit has been reached.
Mobile Platform should be physically centered on the Azimuth axis.

3 – Polarization Angle and Stow Limit Indicator

740/950/980 Mobile Platform Range:	-70° to 70°
1200/1800 Mobile Platform Range:	-90° to 90°

Ka66 / 1800 Circular Band Signals will have the Polarization Angle disabled, and will display 'DDDDD"

S Polarization Stow Limit has been reached.
Mobile Platform should be physically centered on the Polarization axis.

4 – System Status (status meanings explained in the software section of this report)

AC	Azimuth Calibration
AT	ACP Testing
CC	Compass Calibration
DT	Dish Testing
EC	Elevation Calibration
II	Idle
LK	Locked on Satellite
MM	Manual Movement
PC	Polarization Calibration
PK	Peaking
PS	Positioning
SG	Stowing
SR	Searching
ST	Stowed

5 – Receive RF Signal

Receive RF Signal as measured from the LNB. The letter '**U**' next to the RF Value indicates an unlocked status, whereas the letter '**L**' next to the RF value indicates a Locked on satellite status.

6 – GPS Status Flag and Compass Status Flag

The first letter represents the GPS status, and the second letter represents the Compass status (i.e. VV, FF, OO, FO, OF, OV, VO).

V	GPS/Compass Status is Valid/Normal
F	GPS/Compass Status has failed
O	GPS/Compass Coordinates have been overridden

7 – Modem Status

Displays the receive strength of the satellite, and the Modem/Transmitter Status.

D	Transmitter Disabled
E	Transmitter Enabled
U	Unknown (Communication with Satellite Modem / VSAT has failed)

(E.g. M140D represents modem signal strength of 140, and transmitter is disabled)

6.6.1.2. EL

Displays real-time current drawn and speed settings for the elevation motor, as well as real-time elevation angle and limits, offset, window size, and Elevation adjustment gap.

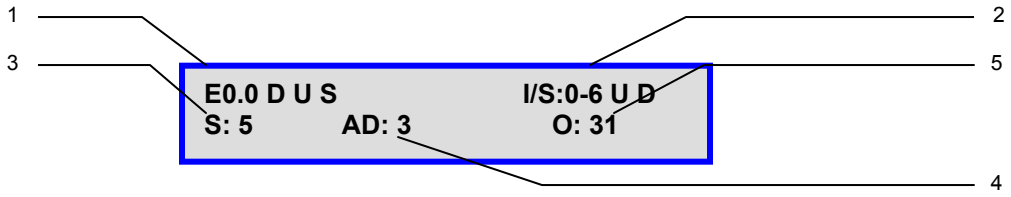


Fig. 15: "EL" (Elevation) Display

1 – Real-Time Elevation Angle

E (Elevation) The number value after the "E" represents the real time elevation angle.

D The letter "D" will appear to indicate Down Limit has been reached on the elevation axis
U The letter "U" will appear to indicate UP Limit has been reached on the elevation axis
S The letter S will appear to indicate the Elevation angle has reached the stow position (Antenna Stowed).

2 – Current and Speed Settings

I/S Real-Time current of the elevation motor is to the left of the dash, and speed constant of the elevation movement is to the right of the dash (i.e. 0-6 represents current of 0 at a set speed of 6).
U The letter "U" will appear if there is an up movement on the elevation axis.
D The letter "D" will appear if there is a down movement on the elevation axis.

3 - Search Window Elevation Limit

This value represents the amount of degrees the antenna will point above and below the calculated target elevation coordinate when searching for satellite. (S: 5 – implies elevation search window is 5º)

4 – Advanced Search Elevation Gap

Parameter used to determine the small incremental adjustments required for a more accurate satellite search. It represents the value used while searching on an incline surface on elevation angle. Decreasing this value will add accuracy to the Search Window, but will increase the search time. (AD: 3 – implies that the elevation angle will adjust if 3º gap from the calculated angle)

5 - Elevation Offset

The number of degrees at which the iNetVu™ Mobile Software will offset the reading from the Inclinometer in order to produce an accurate (+/- 2°) Elevation Angle (e.g. O: 31 implies elevation offset of 31). These values initially default, and are set after target calibration is performed.

6.6.1.3. AZ

Displays real-time current drawn and speed settings for the azimuth motor, as well as real-time azimuth angle and limits, search window size, zero and pot factor.

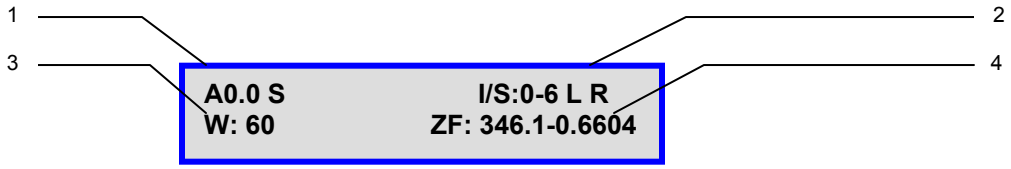


Fig. 16: "EL" (Elevation) Display

1 – Real-Time Azimuth Angle

A (Azimuth) – Real time Azimuth angle reading, down to the tenth of a decimal.
S The letter "S" will appear to indicate the stow Limit has been reached on the azimuth axis

2 – Current and Speed Settings

I/S Real-Time current of the azimuth motor is to the left of the dash, and speed constant of the azimuth movement is to the right of the dash (i.e. 0-6 represents current of 0 at a set speed of 6).
L The letter "L" will appear if there is a 'left' movement on the azimuth axis.
R The letter "R" will appear if there is a 'right' movement on the azimuth axis.
(See appendix 3 for detail on default speed and current settings)

3 - Search Window Azimuth Limit

This value represents the amount of degrees the antenna will search for satellite along the azimuth axis to the left and right of the calculated target antenna azimuth coordinate when searching for satellite. (i.e. W: 60 implies 60º search to the left and right of the target antenna azimuth angle, totally 120º)

4 – ZF (AZ Pot Zero and AZ Pot Factor)

AZ Pot Zero (to the left of the dash, i.e. 346.1) is an A/D value from the potentiometer which physically determines where the iNetVu™ Mobile Software places Azimuth Angle 0°. The AZ Pot Zero may vary approximately +15% from the Default values (see appendix 3).

AZ Pot Factor (to the right of the dash, i.e. 0.6604) is an A/D value from the potentiometer which allows the iNetVu™ Mobile Software to convert the A/D value of the Potentiometer into an equivalent angle. The AZ Pot Factor should vary approximately +15% from the Default values (see appendix 3).

The AZ Pot Factor and AZ Pot Zero are calculated during the Azimuth Calibration process.

6.6.1.4. PL

Displays real-time current drawn and speed settings for the polarization motor, as well as real-time polarization angle and limits, offset, zero and pot factor.

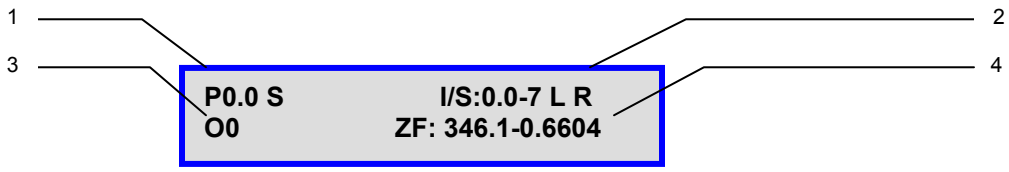


Fig. 17: "PL" (Polarization) Display

1 – Real-Time Polarization Angle

P (Polarization) – Indicates the real time polarization angle of the iNetVuTM Antenna.
S The letter "S" will appear to indicate the stow Limit has been reached on the polarization axis

2 – Current and Speed Settings

I/S Real-Time current of the polarization motor is to the left of the dash, and speed constant of the polarization movement is to the right of the dash (i.e. 0.0-7 represents real-time current of 0.0 and a set speed of 7).
L The letter "L" will appear if there is a 'left' movement on the polarization axis.
R The letter "R" will appear if there is a 'right' movement on the polarization axis.
See appendix 3 for default speed and current values.

3 - Polarization Offset

This value represents the offset in the polarization angle.

4 – ZF (PL Pot Zero and PL Pot Factor)

PL Pot Factor is an A/D value from the potentiometer which allows the iNetVu™ Mobile Software to convert the A/D value of the Potentiometer into an equivalent angle. The PL Pot Factor should vary approximately +15% from the Default values (see appendix 3).

PL Pot Zero is an A/D value from the potentiometer that physically determines where the iNetVu™ Mobile Software places Polarization Angle 0°. The PL Pot Zero may vary approximately +15% from the Default values (see appendix 3).

The PL Pot Factor and PL Pot Zero are calculated during the Polarization Calibration process.

6.6.1.5. GPS

Displays GPS Status and current GPS Heading.

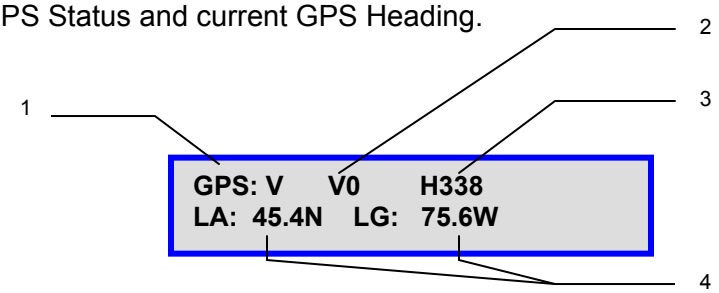


Fig. 18: "GPS" (GPS) Display

1 – GPS Status

V	GPS Status is Valid
F	GPS Status has Failed
O	GPS Coordinates have been overridden

2 – GPS Velocity

3 – GPS Heading

4 – GPS Coordinates

LA	Current Latitude Coordinate rounded to one decimal place in degree format.
LG	Current Longitude Coordinate rounded to one decimal place in degree format.

6.6.1.6. CP

Displays Compass Status, Compass Heading and the Elevation at which the Compass is read.

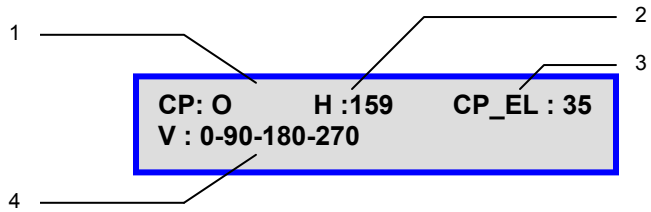


Fig. 19: "CP" Compass Display

(See Compass Configuration section for more detail (G&C))

1 – CP (Compass) Status

V Valid – The compass reading is functioning properly
O Override – the compass has been overridden, and direction entered manually considered
FS Full Search – searches a full 360º search window.

2 – Compass Heading

Compass Heading after Compass has been read.

Approximate Headings:	North	354°
	East	87°
	South	176°
	West	265°

3 – Compass Elevation Reading

Elevation at which the iNetVu™ 7000 Controller will read the compass. At this Elevation, the Compass must be level in reference to the ground.

4-Compass Headings

Antenna will rotate 90° to each of the following positions and read the compass at each: 0°, 90°, 180°, -90°, 0° and display the compass headings.

6.6.1.7. DVB

Displays the Target Satellite Transponder Frequency, Symbol Rate, and Code Rate in order to give the DVB Tuner a lock status once pointed towards satellite.

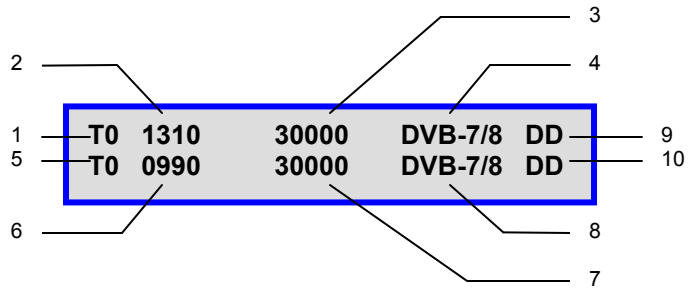


Fig. 20: "SAT" (Satellite) Display

1 – Transponder Number

(There are usually six (6) transponders stored into the controller memory) T0 – T2 are horizontal Receive, and T3-T5 are vertical receive) The user may overwrite the transponder data with his/her own.

2 - Target Satellite Transponder L-Band Frequency of the receive signal (MHz)
3 – Target Satellite Transponder Symbol Rate (ksps)
4 – Target Satellite Transponder Code Rate.

5 – Reference Satellite Transponder Number

(There are usually six (6) transponders stored into the controller memory) T0 – T2 are horizontal Receive, and T3-T5 are vertical receive) The user may overwrite the transponder data with his/her own.

6 – Reference Satellite Transponder L-Band Frequency of the receive signal (MHz)

This transponder is only used if the Reference Satellite Option is selected in the SAT menu.

7 – Reference Satellite Transponder Symbol Rate (ksps)
8 – Reference Satellite Transponder Code Rate.
9 – Power Supplied to LNB from the 7000 Controller for the Target Satellite
10 – Power Supplied to the LNB from the 7000 Controller for the Reference Satellite.

6.6.1.8. SAT

Displays the Target Satellite and its calculated coordinates based on the GPS Heading, Compass Reading, and orbital slot of the desired Satellite.

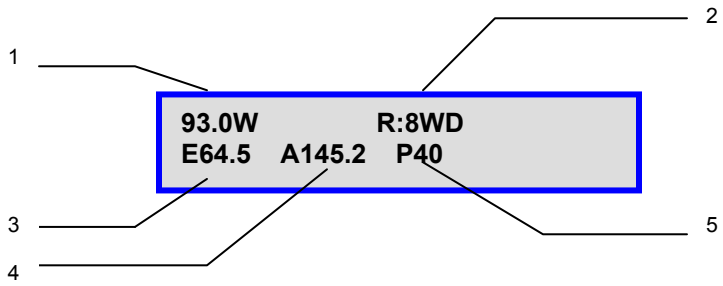


Fig. 21: "SAT" (Satellite) Display

1 – Target Satellite (i.e. 93.0W represents satellite at 93º longitude west)

2 – Target Reference Satellite

D - Reference Satellite Search Mode Disabled.
E – Reference Satellite Search Mode Enabled.

3 – Target Elevation
4 – Target Azimuth (in reference to True North)
5 – Target Polarization

6.6.1.9. MOD

1 – Modem Signal Quality Factor (SNR)
2 – Transmitter Status

D – Transmitter Disabled
E- Transmitter Enabled

6.6.1.10. IP

Displays the IP Address of the iNetVu™ 7000 Controller (C_IP) and the IP Address of the VSAT Modem (M_IP).

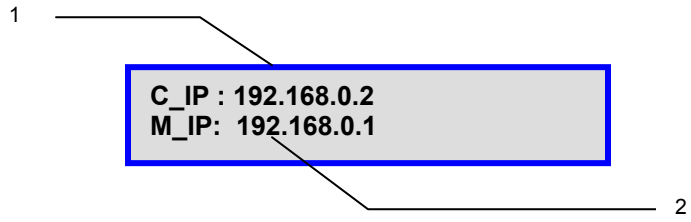


Fig. 22: "IP" (IP) Display

1 – iNetVu™ 7000 Controller's IP Address (Default: 192.168.0.2)
2 – VSAT Modems IP Address (User Defined)

6.6.1.11. GW

Displays the Gateway Parameters of the iNetVu™ 7000 Controller

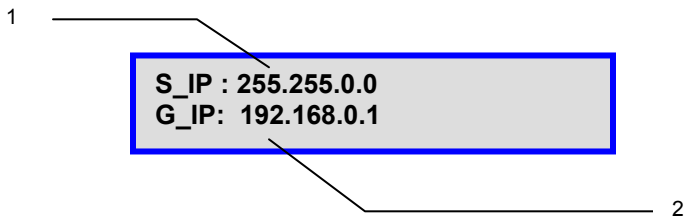


Fig. 23: "GW" (Gateway) Display

1 – S_IP (iNetVu™ 7000 Controller's Subnet Mask IP Address – Default 255.255.0.0)

2 – Gateway IP Address (Default: 192.168.0.1)

6.6.2. OPERATION

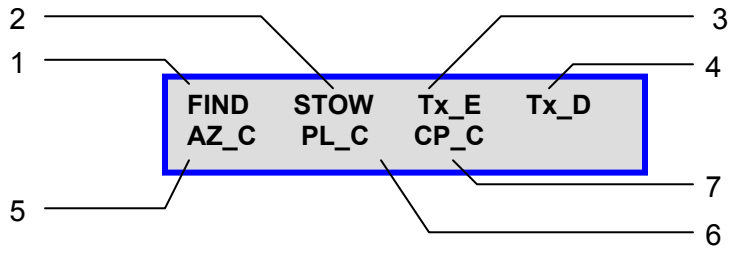


Fig. 24: Operation Menu

FIND	(Find Satellite) Performs automatic satellite acquisition.
STOW	Stows the antenna
Tx_E	(Transmitter Enable) Enables the transmitter after locking onto the designated satellite.
Tx_D	(Transmitter Disable) Disables the transmitter after locking onto the designated satellite.
AZ_C	(Azimuth Calibration) Performs a complete Azimuth Calibration.
PL_C	(Polarization Calibration) Performs a complete Polarization Calibration.
CP_C	(Compass Check) Tests the Compass' accuracy and Calibrates the Compass, should the compass be found to be inaccurate

1 – Find Satellite

Automatically finds and locks onto the satellite signal by communicating with the Satellite Modem and using the GPS coordinates, the compass heading, and internal parameters of the Satellite Modem. Typically, it takes approximately 3-5 minutes to find satellite.
If the Antenna is already pointed on the satellite, clicking **Find Satellite** will re-peak the Antenna onto the signal.

2 – Stow

Re-centers the antenna and lowers it into the stowed position.

3 –Transmitter Enable

Enables the Transmitter once locked onto satellite.

4 –Transmitter Disable

Disables the Transmitter once locked onto satellite.

5 –Azimuth Calibration

Performs a complete Azimuth Calibration.

- Antenna will completely rotate counter-clockwise to the physical limit and temporarily record the A/D value from the Potentiometer.
- Antenna will completely rotate clockwise to the physical limit and temporarily record the A/D value from the Potentiometer.
- Based on the A/D values of the two (2) physical limits, and the range of motion for the Mobile Platform, the AZ Pot Factor is calculated.
- Antenna will center itself and attempt to locate the cut-off edges of the Azimuth Stow Switch.
- After detecting at which angles the ST Switch turns OFF, the Azimuth zero position is calculated and the AZ Pot Zero is set at the zeroed A/D value.

6 – Polarization Calibration

Performs a complete polarization calibration.

- Antenna will completely rotate counter-clockwise to the physical limit and temporarily record the A/D value from the Potentiometer.
- Antenna will completely rotate clockwise to the physical limit and temporarily record the A/D value from the Potentiometer.
- Based on the A/D values of the two (2) physical limits, and the maximum range of motion for the Mobile Platform, the PL Pot Factor is calculated.
- Antenna will center itself and attempt to locate the cut-off edges of the Polarization Stow Switch.
- After detecting at which angles the ST Switch turns OFF, the Polarization zero position is calculated and the PL Pot Zero is set at the zeroed A/D value.

7 – Compass Calibration

Ensure that there are no metallic objects that could interfere with the Compass, and that the Mobile Platform is on level surroundings.

Orient the Mobile Platform as depicted in the following figure. It is recommended that you use an external compass to be as accurate with the orientation as possible.

This end faces South

North - 354°
West - 265°
South - 176°
East - 87°

This end faces North

Fig. 25: Compass Orientation and Approximate Values

The Antenna will now rotate in 90° intervals and attempt to calibrate the compass.

A message prompt will appear to notify you that the Compass Calibration has been completed successfully or not.

6.6.3. CONFIG

This Menu will allow the user to configure all components of the iNetVu™ System. A description of each menu and their purpose is outlined below. This section explains the different components of the configuration menu, and what each component means. A step-by-step procedure of how to configure the system is explained in the appendices. Please refer to the section in the appendices corresponding to the service you may be using.

Fig. 26: CONFIG (Configuration) Menu

SAT	Allows the user to configure the Orbital slot / Longitude of the desired Satellite. The **Find Satellite** command will use this value when attempting to find and lock onto a satellite signal.
MOD	Allows the user to configure the modem settings within regards to frequency, symbol rate, transmit and receive polarization, hemisphere, and LNB Power.
DVB	Allows the user to set the DVB Receiver parameters. The user can enter the desired satellite transponder frequency, symbol rate, and code rate.
EL	(Elevation) Allows configuration of the elevation current, limits, slow speed, window size, and adjustment gap.
AZ	(Azimuth) Allows configuration of the azimuth pot and zero factor, stow limit, speed, search window size, and current limits.
PL	(Polarization) Allows configuration of the polarization pot and zero factor, skew adjustment, stow limit, polarization offset, speed, and current limits.
G&C	(GPS and Compass) Configuration of GPS coordinates and Compass parameters.
C&P	(Controller and Platform) Configurations of controller signal receive option and Platform information.
RT	(Router and DNS) Allows for the configuration of the router IP address, and the DNS IP address.
G&S	(Gateway and Subnet) Allows for the configuration of the controller

	subnet IP address, as well as the controller gateway IP address.
IP	Configuration screen of the controller IP address, and the VSAT modem's IP address.
SR	Service Configuration screen, allows for the type of service selection and means of communication.

6.6.3.1. SAT

Allows for the Configuration of the target satellite and the satellite polarization offset. This menu also allows the enabling of the reference satellite search option as explained in the "Monitor" section of this manual.

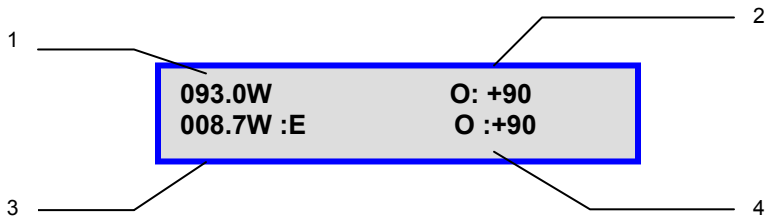


Fig. 27: "SAT" (Satellite) Configuration Display

1 – Target Satellite

Orbital slot / Longitude of the desired Satellite. The **Find Satellite** command will use this value when attempting to find and lock onto a satellite signal.

2 – Satellite Transmit Polarization Offset (range: -90 to +90)

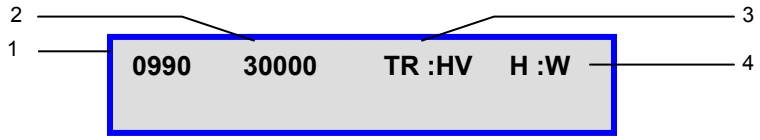
In North America and not limited to the rest of the world
1200/1800 – Vertical Transmit (Offset = 0), Horizontal Transmit (Offset = 90)
980/740 – Offset = 0 (considering OMT is adjusted manually)

3 – Reference Satellite Longitude and hemisphere.

D – Disable Reference Satellite Option
E – Enable Reference Satellite Option

4 – Reference Satellite Transmit Polarization Offset (range: -90 to +90)

6.6.3.2. MOD



1 – Configured Satellite Modem Receive Frequency in MHz with no decimals.

2 – Configured Satellite Modem Symbol Rate in Ksps.

3 – Transmit and Receive Polarization.

HH – Horizontal Transmit, Horizontal Receive
HV – Horizontal Transmit, Vertical Receive
VH – Vertical Transmit, Horizontal Receive
VV – Vertical Transmit, Vertical Receive

Transmit polarity is represented by the first character, while Receive polarity is represented by the second character, hence TR

4 – Hemisphere of location of modem.

This is typically used for the HNS modem; other service providers may not need this requirement.

E – East
W – West

Modems operating in the eastern hemisphere require E to be selected, while modems operating in the western hemisphere require W to be selected.

6.6.3.3. DVB

Allows the configuration of the Target Satellite Transponder Frequency, Symbol Rate, and Code Rate in order to give the DVB Tuner a lock status once pointed towards satellite.

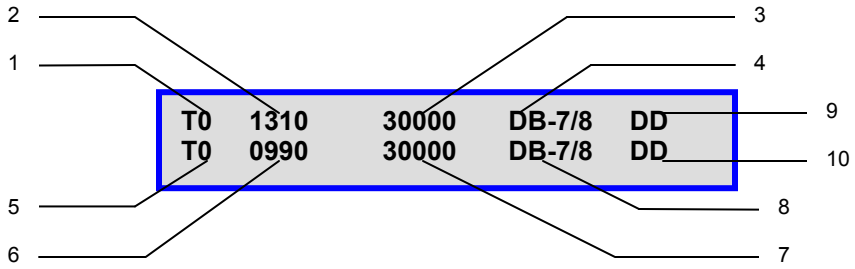


Fig. 28: "SAT" (Satellite) Display

1 – Target Satellite Transponder Number

T0 – T2: Transponder Frequencies for Horizontal Receive
T3 – T5: Transponder Frequencies for Vertical Receive

The User may enter his/her own transponder parameters.

2 - Configurable Target Satellite Transponder L-Band Frequency of the receive signal (MHz)

3 – Configurable Target Satellite Transponder Symbol Rate (ksps)

4 – Configurable Target Satellite Transponder Code Rate.

5 – Reference Satellite Transponder Number

T0 – T2: Transponder Frequencies for Horizontal Receive
T3 – T5: Transponder Frequencies for Vertical Receive

The User may enter his/her own transponder parameters.

6 – Configurable Reference Satellite Transponder L-Band Frequency of the receive signal (MHz)

7 – Configurable Reference Satellite Transponder Symbol Rate (ksps)

8 – Configurable Reference Satellite Transponder Code Rate.

9 - LNB Power (Target Satellite)

In cases where the LNB requires more power then the modem can provide, or if the user would like to power LNB from the controller, or if the user would like to find satellite without the use of a modem, this option allows for power from the controller to be supplied to the LNB through the RX IN cable from the controller to the platform itself.

DD – will disable this option, and provide power to the LNB straight from the modem. In this case, a splitter must be used for the RF connection as depicted in the figure below.

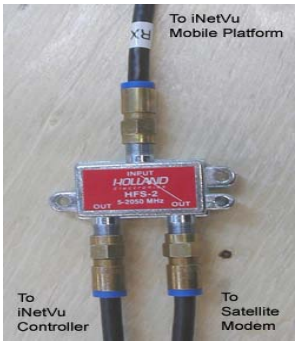


Fig. 29: RF Cable Setup for DIS selection

7000 Controller Power Output Range Option Capabilities: **13, 14, 18, 19, 20, 21 V @ 500mA (max)**

If the user chooses to power the LNB from the controller, he/she should verify the power/voltage range requirements of the LNB in use, and configure the iNetVu™ 7000 Controller according to those power/voltage requirements.

10 - LNB Power (Reference Satellite)

Power Supplied to the LNB during search for the reference satellite (if this option is selected)

6.6.3.4. EL

The EL menu allows for the Configuration of the elevation axis. Options include configuring the elevation offset, the satellite search window, the elevation adjustment gap, the mechanical elevation limits, the slow speed, and the current limits.

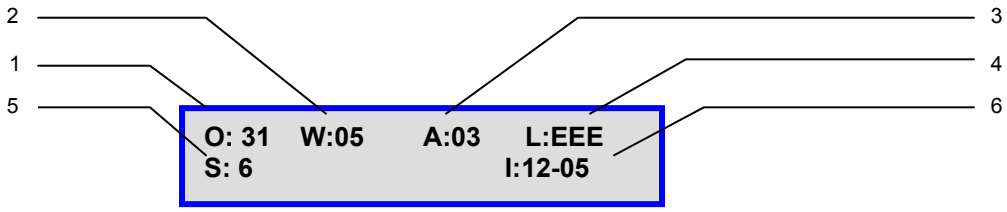


Fig. 30: "EL" (Elevation Configuration) Display

1 – Elevation Offset

The Elevation Offset is specific to each type of platform. See Appendix 3 for a list of all the elevation offset default values. It is the number of degrees at which the iNetVu™ Mobile Software will offset the reading from the Inclinometer in order to produce an accurate (+/- 2°) Elevation Angle. The user may set the offset with the range of 15º-55º, although altering this number from its default value may give an inaccurate offset reading. This should not be tampered without first consulting a C-COM Technical Support Representative.

2 – Elevation Search Window

The Search Window is the area of the sky which the iNetVu™ Mobile System will search for the desired Satellite. It uses a rectangular window and searches for the Satellite using smaller concentric windows until the desired Satellite is found. The Search Window range is preset by default for optimum performance, however this offset may be manually changed in the range of 2º-20º.

Fig. 31: Elevation Coverage of search window

The default Elevation (Vertical) range is 5° on each side of the Target Point. Increasing the size of the Search Window will increase the ability to find the desired Satellite, although increasing the Search Window will lengthen the search time.

3 - Advanced Search Elevation Gap

With a configurable range of (2º-20º) this parameter is used to determine the small incremental adjustments required for a more accurate satellite search. Decreasing this value will add accuracy to the Search Window, but will increase the search time. This value is used while searching on an inclined surface. For instance A: 03 means the elevation angle will adjust if 3º gap from the calculated angle. This value is set by default for optimum performance.

4 – Limit Switches (L: EEE)

Allows the enabling and disabling of the UP, DOWN, and STOW limits respectively.

The first character (**E**EE) represents the UP limit. The second character (E**E**E) represents the DOWN limit and the third character (EE**E**) represents the STOW limit. The user my change the limit configuration between:

E – Enable Limit
D – Disable Limit

D - Disable Limit
This option disables UP, DN, and ST limits for testing and troubleshooting (i.e. DEE – represents disabled Up limit, and enabled down and stow limit).

E – Enable Limit

Once enabled, the up, down and stow limits will be activated whenever the up, down, and stow sensors have been triggered on the iNetVu™ Mobile platform.

5 –Speed Setting

S The user may configure the slow speed of the elevation movement. The slow speed is a basis for the satellite searching procedure.

6 – Current Settings

A software controlled current protection for the Mobile Platform's elevation motors. When any of the Mobile Platform's motors are moving at the associated speed, the current drawn to move the motor is monitored and should it exceed the Current Limit, an error message will appear. For Motor Speeds that are not listed (Speed 1, 2, 4, 5, 7, 8), the Current Limit for those speeds is calculated using a percentage of the Current Limit above it. See appendix 3 for the default current limits for all iNetVu™ Mobile Platforms.

- Current Limit 8 – 90% of Current Limit 9
- Current Limit 7 – 80% of Current Limit 9
- Current Limit 5 – 90% of Current Limit 6
- Current Limit 4 – 80% of Current Limit 6
- Current Limit 2 – 90% of Current Limit 3
- Current Limit 1 – 80% of Current Limit 3

I Configurable Current Limit For High Speed (9) movement is to the left of the dash, and Configurable Current Limit For Slow Speed (6) movement is to the right of the dash.

(i.e. I: 12-05 Represents Current Limit of 12 A @ speed 9, and Current Limit of 5 A @ speed 6)

6.6.3.5. AZ

The AZ menu allows configuration of the Azimuth axis, including pot zero, pot factor, stow limit, azimuth search window size, slow speed movements, and current limits at high and slow speeds.

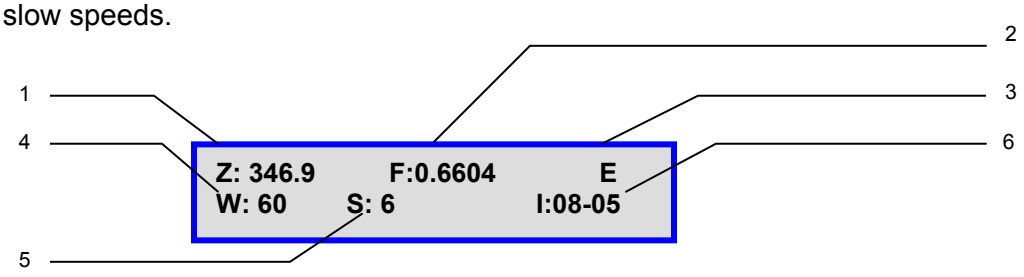


Fig. 32: "EL" (Elevation) Display

1 – Configurable AZ Pot Zero

AZ Pot Zero is an A/D value from the potentiometer calculated upon azimuth calibration which physically determines where the iNetVu™ Mobile Software places Azimuth Angle 0°. The AZ Pot Zero may vary approximately +15% from the Default values (see appendix 3). The user may edit these values through this window, however any changes may result in failure to recognize the correct 0° angle. This parameter has a configurable rang of (150-700).

2 – Configurable AZ Pot Factor

AZ Pot Factor is an A/D value from the potentiometer calculated upon azimuth calibration which allows the iNetVu™ Mobile Software to convert the A/D value of the Potentiometer into an equivalent angle. The AZ Pot Factor should vary approximately +15% from the Default values (see appendix 3). The user may edit these values through this window, however any changes may result in failure to recognize the correct azimuth angles. This value has a configurable range of (0.4115-1.3030)

3 - Stow Limit

Enabling this function allows for the iNetVu™ system to trigger the stow limit when the mechanical stow range of the azimuth is reached. Disabling this limit, may result in failure to initiate the automatic stow command.

E – Enable Stow Limit
D – Disable Stow Limit

4 – Configurable Azimuth Search Window Size

The Search Window is the area of the sky which the iNetVu™ Mobile System will search for the desired Satellite. It uses a rectangular window and searches for the Satellite using smaller concentric windows until the desired Satellite is found. The Search Window range may be manually changed from the default settings which iNetVu™ uses to find the satellite should the desired Satellite cannot be found. The configurable range is 2º-99º on both sides of the target azimuth angle.

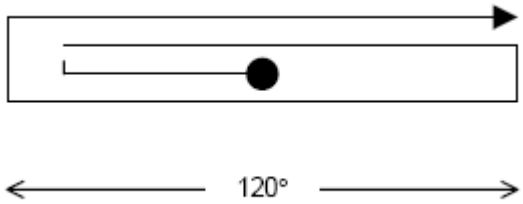


Fig. 33: Azimuth Coverage of search window

The default Azimuth (Horizontal) range is 60° on each side of the Target Point. Increasing the size of the Search Window will increase the ability to find the desired Satellite, although increasing the Search Window will lengthen the search time.

5 –Speed Setting

S The user may configure the slow speed of the azimuth movement. The slow speed is a basis for the satellite searching procedure.

6 – Current Settings

A software controlled current protection for the Mobile Platform's azimuth motors. When any of the Mobile Platform's motors are moving at the associated speed, the current drawn to move the motor is monitored and should it exceed the Current Limit, an error message will appear. For Motor Speeds that are not listed (Speed 1, 2, 4, 5, 7, 8), the Current Limit for those speeds is calculated using a percentage of the Current Limit above it. See appendix 3 for the default current limits for all iNetVu™ Mobile Platforms.

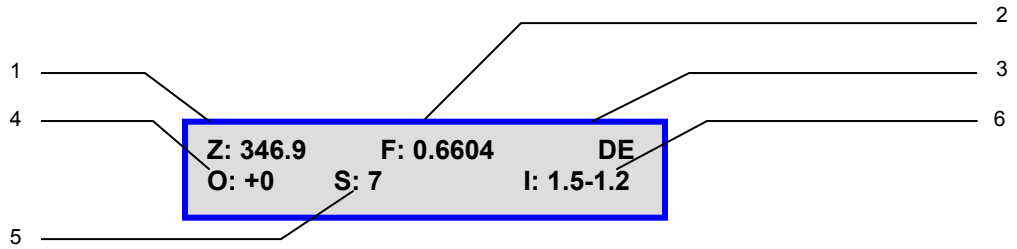
- Current Limit 8 – 90% of Current Limit 9
- Current Limit 7 – 80% of Current Limit 9
- Current Limit 5 – 90% of Current Limit 6
- Current Limit 4 – 80% of Current Limit 6
- Current Limit 2 – 90% of Current Limit 3
- Current Limit 1 – 80% of Current Limit 3

I Configurable Current Limit For High Speed (9) movement is to the left of the dash, and Configurable Current Limit For Slow Speed (6) movement is to the right of the dash.

(i.e. I: 08-05 Represents Current Limit of 8 A @ speed 9, and Current Limit of 5 A @ speed 6)

6.6.3.6. PL

The PL menu allows for the configuration of the polarization axis. Options include the setting of the pot zero, and the pot factor, as well as the skew adjustment and stow limit functionality, the polarization offset, slow speed, and current limits for fast and slow speeds.



1 – PL Pot Zero

PL Pot Zero is an A/D value from the potentiometer that physically determines where the iNetVu™ Mobile Software places Polarization Angle 0°. The PL Pot Zero may vary approximately +15% from the Default values (see appendix 3). The PL Pot Zero is calculated during the Polarization Calibration process. The user may edit these values through this window, however any changes may result in failure to recognize the correct 0° angle. This parameter has a configurable range of (50-400)

2 – PL Pot Factor

PL Pot Factor is an A/D value from the potentiometer which allows the iNetVu™ Mobile Software to convert the A/D value of the Potentiometer into an equivalent angle. The PL Pot Factor should vary approximately +15% from the Default values (see appendix 3). The PL Pot Factor is calculated during the Polarization Calibration process. The user may edit these values through this window, however any changes may result in failure to recognize the angle value. This parameter has a configurable range of (0.1437-0.5863)

3 – Skew Adjustment and Stow Limit Function

Allows the enabling and disabling of the skew adjustment and polarization stow limit respectively..

The first character (**E**E) represents the skew adjustment. The second character (E**E**) represents the Polarization ST limit. The user my change the limit configuration between:

EE – Enable Skew Adjustment, Enable Polarization Stow limit
DE – Disable Skew Adjustment, Enable Polarization Stow limit
ED – Enable Skew Adjustment, Disable Polarization Stow limit
DD – Disable Skew Adjustment, Disable Polarization Stow limit

For an iNetVu™ 1200/1800 Mobile Platforms, the Polarization Stow Limit is constantly ON. The Skew Adjustment will rotate the antenna on the polarization axis in both directions to locate the 3dB drop in Signal Strength, and then re-center itself using the best possible Polarization Angle.

4 - Polarization Offset

By default this polarization-offset value is set to +0°. If there happens to be a requirement for a polarization offset, the user may manually enter this value in this area.

5 –Speed Setting

S The user may configure the slow speed of the polarization movement. The slow speed is a basis for the satellite searching procedure. See appendix 3 for details.

6 – Current Settings

A software controlled current protection for the Mobile Platform's polarization motors. When any of the Mobile Platform's motors are moving at the associated speed, the current drawn to move the motor is monitored and should it exceed the Current Limit, an error message will appear. For Motor Speeds that are not listed (Speed 1, 2, 4, 5, 7, 8), the Current Limit for those speeds is calculated using a percentage of the Current Limit above it. See appendix 3 for the default current limits for all iNetVu™ Mobile Platforms.

- Current Limit 8 – 90% of Current Limit 9
- Current Limit 7 – 80% of Current Limit 9
- Current Limit 5 – 90% of Current Limit 6
- Current Limit 4 – 80% of Current Limit 6
- Current Limit 2 – 90% of Current Limit 3
- Current Limit 1 – 80% of Current Limit 3

I Configurable Current Limit For High Speed (9) movement is to the left of the dash, and Configurable Current Limit For Slow Speed (6) movement is to the right of the dash.

(i.e. I: 1.5-1.2 Represents Current Limit of 1.5 A @ speed 9, and Current Limit of 1.2 A @ speed 7)

6.6.3.7. G&C

Allows for the Configuration of the GPS parameters and settings, as well as the Compass parameters and settings.

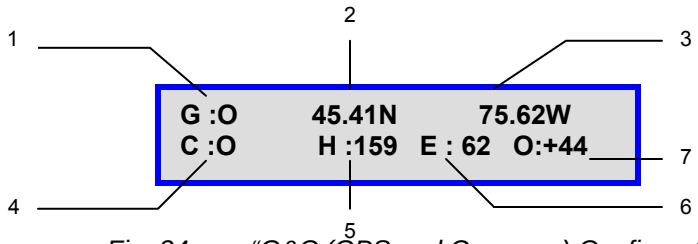


Fig. 34: "G&C (GPS and Compass) Configuration

1 – GPS Status Configuration

N Use Coordinates from GPS Antenna

O Override GPS and use the coordinates entered (2) and (3). Enables the GPS coordinates to be manually overridden. This should only be enabled in the event that the GPS Antenna is malfunctioning and the user has a reliable, alternate source for coordinates.

Note: If you have overridden the GPS coordinates, they will have to be updated if the Mobile Platform has moved to a new location since the overridden values will no longer be accurate.

2 – GPS Latitude Coordinate
3 – GPS Longitude Coordinate

4 – Compass Status Configuration

N Use Coordinates attained from the Compass to determine heading for acquisition

O Override Compass - Enables the Compass to be manually overridden. Ensure that you are using a reliable alternate source. After enabling Override, you may enter the vehicle's direction as indicated on your alternate compass. Keep in mind that the base of the iNetVu™ Mobile Platform is oriented to the rear of your vehicle. When taking the direction on the alternate compass, take the direction of your reading while facing the front of the vehicle, and use this orientation with reference to true north when entering the heading.

F Performs a full 360º Azimuth search for the desired Satellite. This process may take longer to find satellite considering the search method is not limited to the calculated search window.

5 – Compass Heading

The number of degrees the front of the Mobile Platform is rotated in reference to True North.

6 – Elevation of Compass Reading

Number of degrees that the Antenna requires to be elevated to ensure that the compass is level and is able to acquire an accurate compass reading (see appendix 3 for default values).

6.6.3.8. C&P

This menu allows for the configuration of the controller input settings as well as the platform type and serial number.

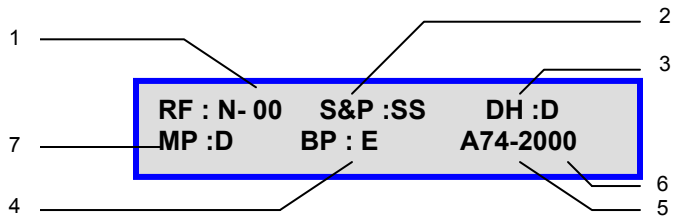


Fig. 35: "CP" Compass Display

1 – RF Signal Status and Threshold (Threshold should be set only if RF is overridden)

N Normal Receive, the Rx Signal is taken from the Rx IN input of the DVB tuner.
O RF Override, used by the iNetVu™ Mobile Software to begin a signal optimization process for peaking on a Satellite signal after initially locating it. Enabling this option and setting the RF value too low (i.e. where the 00 is located in N-00) will result in an inability to acquire a reliable signal and IMS will be unable to distinguish between the desired signal and noise.

2 – Search and Peaking (S&P)

This configuration option allows for setting the method of searching and peaking for the controller. The different options include:

SS – Search for satellite based on the DVB Tuner Transponder parameters, and Peak on satellite based on the DVB Tuner parameters (i.e. frequency, symbol rate, code rate)
RM - Search for satellite based on the RF signal parameters, and Peak on satellite based on the Modem SNR.
RR - Search for satellite based on the RF signal parameters, and Peak on the satellite based on RF signal and threshold.

3 –DHCP Status

The 7000 Controller can be programmed to obtain an IP address from a DHCP Server (i.e. modem, router, etc.)

D – DHCP Disabled (IP must be entered statically)
E – DHCP Enabled (Controller will dynamically obtain an IP address from the DHCP Server)

4- Beep

This option allows for enabling and disabling the Beeping sound when navigating the LCD screen through the front panel keypad.

E – Beep Enabled, a beeping sound will occur upon navigation the LCD Interface.
D – Beep Disabled, the sound will be completely removed.

5- Platform Type

The user is capable of configuring the platform in use, as well as entering the four-digit serial number of the platform located next to the connector plate on the platform itself.

A66A – iNetVu™ Ka66 Mobile Platform (Ka – Band)
A74B - iNetVu™ A740/A750 Mobile Platform (Ku – Band)
A98A - iNetVu™ A980 Mobile Platform (Ku – Band)
A12B - iNetVu™ A1200 Mobile Platform (Ku – Band)
A18A - iNetVu™ A1800 Mobile Platform (Ku – Band)
A18B - iNetVu™ A1800 Mobile Platform (C – Band)
A12P - iNetVu™ 1.2m Flyaway Platform (Ku – Band)

6- Platform Serial Number

The user may enter the last four-digits of the platform serial number located next to the connector plate on the iNetVu™ Mobile Platform.

Fig. 36: iNetVu™ Platform Identification Tag

7 – Motion Protection

iNetVu™ Platform will automatically stow if the antenna is moving at a speed faster then 5 km/h. Also, the iNetVu™ Mobile Platform will automatically stow the antenna should it experience extreme motion, such as severe shaking caused by poor weather conditions.

E- Enabled
D-Disabled

6.6.3.9. RT

This menu will allow the user to configure a router (if necessary) IP address and the Domain Name Server (DNS) IP address. **Note: This menu is still under development, and is currently not functional)**

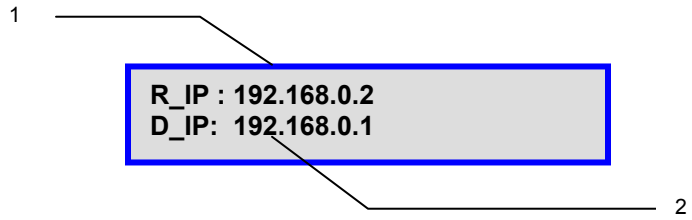


Fig. 37: "RT" (Router and DNS) Configuration

1 – Router IP address
2 – DNS IP address

6.6.3.10. G&S

This menu will allow the user to configure the subnet mask IP address and the Gateway IP address of the iNetVu™ 7000 Controller.

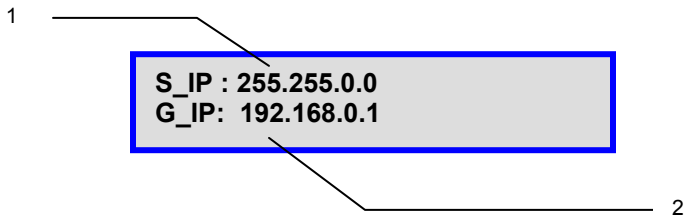


Fig. 38: "GW" (Gateway) Configuration

1 – S_IP (iNetVu™ 7000 Controller's Subnet Mask IP Address – Default 255.255.0.0)

2 – Gateway IP Address (Default: 192.168.0.1)

6.6.3.11. IP

This menu will allow the user to configure the controller IP address, as well as the Modem IP address.

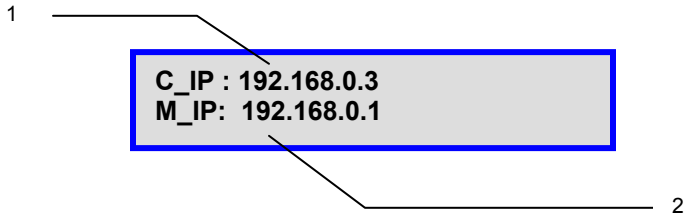


Fig. 39: "IP" Configuration

1 – iNetVu™ 7000 Controller's IP Address

2 – Modem IP Address (Default: 192.168.0.1)

6.6.3.12. SR

This menu will allow the user to configure the controller to the service used for 2-way satellite communication.

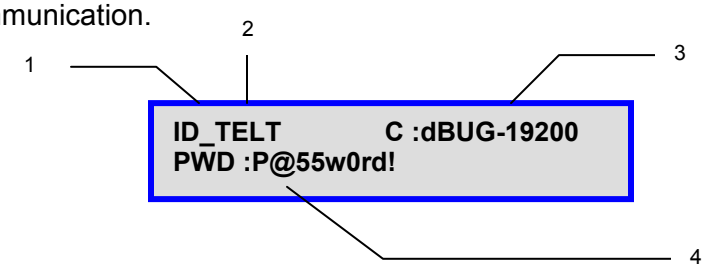


Fig. 40: "SR" (Service) Configuration

1 – Two-Way Mobile Service Selection

Before communication is established with the modem, the user must define the service in use. The iNetVu™ 7000 Controller supports several services, including:

ID - iDirect Service
VA - ViaSat Service
SF - Surfbeam Service
HN - Hughes Service
NA - Stand Alone service - Used to locate and lock onto a manually configured satellite using the DVB receiver unit inside of the controller independent of the modem. The manual configuration requires:

- Orbital Slot of Satellite
- Receive Polarization
- L-Band Rx Frequency (kHz)
- Symbol Rate (kSps)
- FEC Code Rate

2 – Modem Communication Interface

TELT - Telnet Interface
COM - Console Port Interface
HTTP - HTTP Interface
NA - No modem interface applicable, this option is generally selected with the stand-alone service. Locking and peaking onto satellite is based on the DVB Signal and not on the modem SNR value.

3 – Debugging Interface

Used by C-COM Satellite Systems Inc. for internal testing.

DBUG-19200
GPS—9600

4 – Modem Password

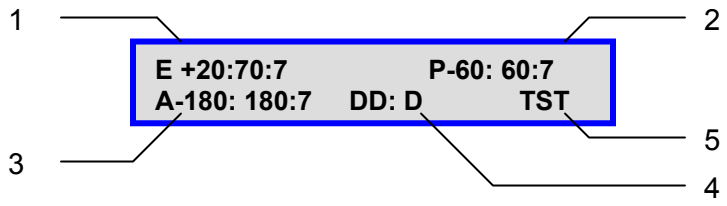
If necessary, the user must enter the modem password into this area for communication to be properly established. The default password is “P@55w0rd!” which is based on most iDirect modem requirements. If no password is required, this area should be left blank.

6.6.4. TEST

Fig. 41: Test Menu

E&A&P	Will allow for Demo Testing on all axes (elevation, azimuth, and polarization) for a user specified angle range.
CP	Tests the compass' heading and accuracy by rotating the antenna at 90° intervals and comparing the compass readings with the actual antenna's movement.
DPLY	Deploys the antenna to a user specified azimuth, elevation, and polarization position.
DPLY_C	Will read the compass heading at a user specified elevation, azimuth, and polarization target point.
A_ACP	Performs an automatic ACP test for Hughes service.
M_ACP	Performs a manual ACP test for Hughes service.
S_ACP	This operation will stop the ACP test from continuing.

6.6.4.1. E&A&P



1 – Elevation Movement

Allows the user to set the start and stop angle of the elevation axis, as well as set the specific speed for elevation movement. (E +20:70:7 –implies from angle 20 to 70 at speed 7)

2 – Polarization Movement

Allows the user to set the start and stop angle of the polarization axis, as well as set the specific speed for polarization movement. (P -60:60:7 –implies from angle -60 to 60 at speed 7)

3 – Azimuth Movement

Allows the user to set the start and stop angle of the azimuth axis, as well as set the specific speed for azimuth movement. (A -180:180:7 –implies from angle -180 to 180 at speed 7)

4 – Axis Selection and looping option

The first two characters refer to the axis selection (i.e. **DD**: D).

DD	Disable Test for all axes
EL	Perform test on the Elevation axis only
AZ	Perform test on the Azimuth axis only
PL	Perform test on the Polarization axis only
AA	Perform tests on all the axes.

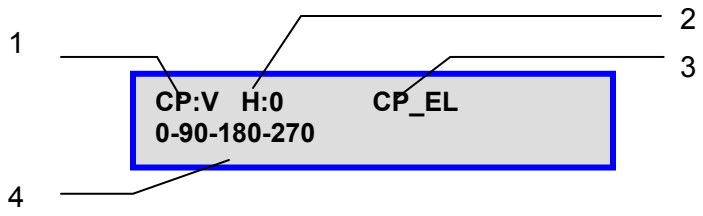
The third character refers to the looping intervals between tests (i.e. DD: **D**).

D	Disables looping, test will only be performed once.
1	Infinitely loops with 30-seconds interval between tests.
2	Infinitely loops with 60-seconds interval between tests.
3	Infinitely loops with 90-seconds interval between tests.
4	Infinitely loops with 120-seconds interval between tests.
5	Infinitely loops with 150-seconds interval between tests.
6	Infinitely loops with 180-seconds interval between tests.
7	Infinitely loops with 210-seconds interval between tests.
8	Infinitely loops with 240-seconds interval between tests.
9	Infinitely loops with 270-seconds interval between tests.

5 – Test Selection

Initiates the test on the specified axes according to the specified ranges, and speeds.

6.6.4.2. CP



1 – Compass Status

V – Valid
O – Override
F - Failed

2 – Compass Heading

3 – Compass Reading Angle

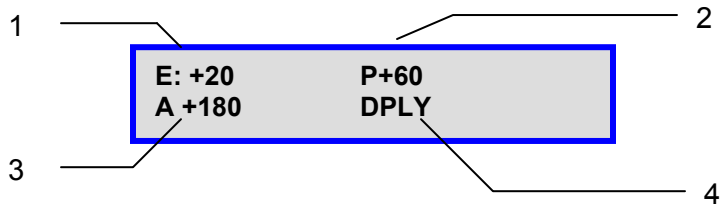
Elevation Angle at which compass is read

4 – Compass Accuracy Readings

Tests the compass' heading and accuracy by rotating the antenna at 90° intervals and comparing the compass readings with the actual antenna's movement.

i. Antenna will center itself; move to the proper Elevation for reading the compass, then read the compass heading.
ii. Antenna will rotate 90° to each of the following positions and read the compass at each: 0°, 90°, 180°, -90°, and 0°.
iii. iNetVu™ Mobile Software will compare the compass heading values read at each position, and determine if they differ by approximately 90°.
iv. The Compass Check will display a message regarding the accuracy of the compass.

6.6.4.3. DPLY



1 – Elevation Movement

User-defined elevation angle of deploy

2 – Polarization Movement

User-defined polarization angle of deploy

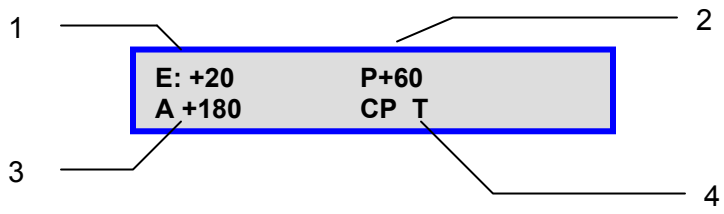
3 – Azimuth Movement

User-defined azimuth angle of deploy

4 – Deploy

Automatically moves antenna to the manually entered Elevation, Azimuth and Polarization angles.

6.6.4.4. DPLY_C



1 – Elevation Movement

User-defined target elevation angle of for compass reading

2 – Polarization Movement

User-defined target polarization angle for compass reading

3 – Azimuth Movement

User-defined target azimuth angle for compass reading

4 – Check Compass at specified target point.

Tests the compass' heading and accuracy at the user defined Elevation, Polarization, and Azimuth angles, by rotating the antenna at 90° intervals and comparing the compass readings with the actual antenna's movement. This function is mainly used for testing purposes.

Antenna will move to the target Elevation, Polarization, and Azimuth for reading the compass heading such that the user can determine if the compass reading is accurate at that point.

6.6.4.5. A_ACP

Initiates an automatic cross-pol test.

6.6.4.6. M_ACP

Initiates a Manual cross-pol test.

6.6.4.7. S_ACP

Stops the cross-pol testing instantly.

6.6.5. INFO

Displays information regarding the iNetVu™ 7000 Controller's firmware and software versions installed, the Mobile Platform it is configured to, and also any Error Codes detected.

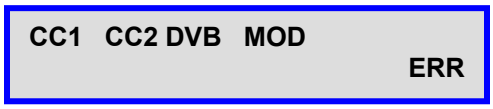


Fig. 42: "INFO" (Information) Display

CC1	Contains information pertaining to the iNetVu ™ 7000 Controller hardware version, software version, firmware version, boot loader version, MAC address, and configuration ID.
CC2	
DVB	Contains information pertaining to the type of DVB Module in use.
MOD	Contains information pertaining to the modem ID, serial number, and version.
ERR	Contains information pertaining to the error code if an error occurs.

6.6.5.1. CC1

This branch menu displays the controller ID, Hardware Version, Firmware, and Boot loader Version

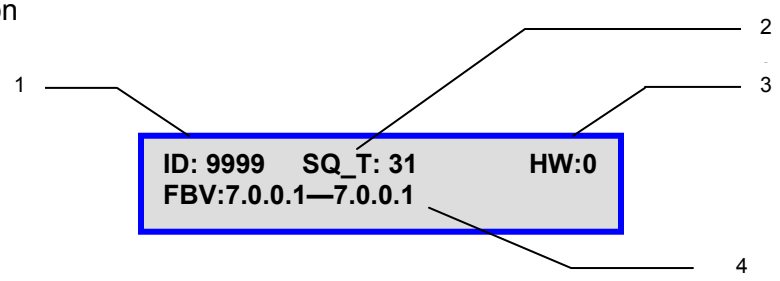


Fig. 43: "CC1" (Controller Info 1) Display

1 – Controller ID Number

The iNetVu™ Controller Serial Number is located on the base of the controller. It is the last 4 digits of the Serial Number.

2 – Signal Quality Threshold

Minimum SNR Value required for the iNetVu™ 7000 Controller to validate signal.

3 – 7000 Controller Board Hardware Type Version

4 – 7000 Controller Firmware and Boot loader version

The firmware version is to the left of the dash (i.e. **7.0.0.1**-7.0.0.1), and the boot loader version is to the right of the dash (i.e. 7.0.0.1-**7.0.0.1**).

6.6.5.2. CC2

This branch menu displays the controller MAC address and Configuration ID.

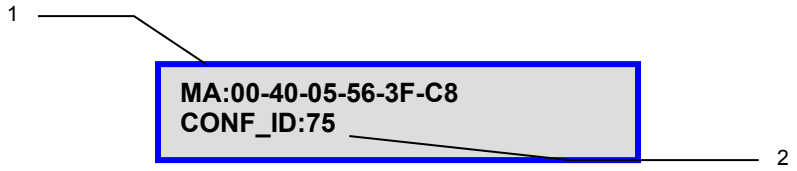


Fig. 44: "CC2" (Controller Info 2) Display

1 – iNetVu™ 7000 Controller MAC address

2 – iNetVu™ 7000 Controller Configuration ID (for internal use).

6.6.5.3. DVB

This branch menu displays the controller DVB Module Type.

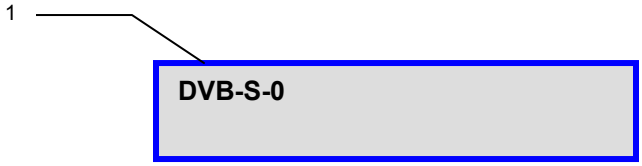


Fig. 45: "DVB" (DVB Module) Display

1 – The DVB Module currently embedded into the iNetVu™ 7000 Controller.

6.6.5.4. MOD

This branch menu displays the VSAT Modems ID, Serial Number, and software version number.

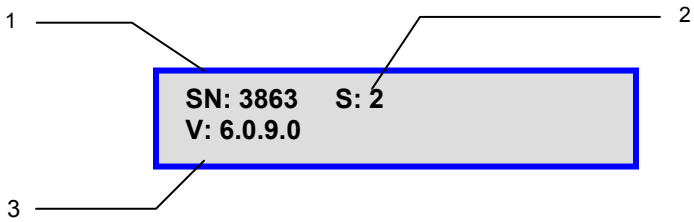


Fig. 46: "MOD" (Modem) Display

1 – VSAT Modem Serial number

2 – Modem Status

1 - Modem Initializing Status
2 - Modem Normal Status
16 - ACP in progress

3 – Satellite Modem's Firmware Version

6.6.5.5. ERR

This branch menu displays the error code if an error occurs.

Fig. 47: "ERR" (ERROR) Display

1 – iNetVu™ Error code display

7. iNetVu™ 7000 Software

The iNetVu™ Mobile Software plays an integral role in connecting you and iNetVu™ Mobile System. It has the ability to communicate with the Satellite Modem, automatically find and lock onto a satellite and stow the antenna when completed. The user can also monitor real-time system parameters such as Signal Strength, GPS Coordinates, motor currents, as well as allowing the user the capability of manually moving the antenna and performing any maintenance tests and calibration tasks.

7.1. Operation Modes

iNetVu™ 7000 Mobile Software currently offers only one mode of operation for its users.

7.2. Navigating Menus

To navigate the iNetVu™ Mobile Software, **right-click** the iNetVu™ swirl icon located in the System Tray.

There are 4 options available:

- Advanced Controls
- Maintenance
- About
- Exit

7.2.1. Advanced Controls

The Advanced Controls menu allows users to monitor system parameters and manually move the antenna, as well as conduct automatic processes and functions.

WARNING

Improper use of Advanced Controls menu can render the iNetVu™ Mobile System inoperable and may be in violation of FCC regulations. The user can halt any operation at any time by clicking STOP button located in the Automatic Controls.

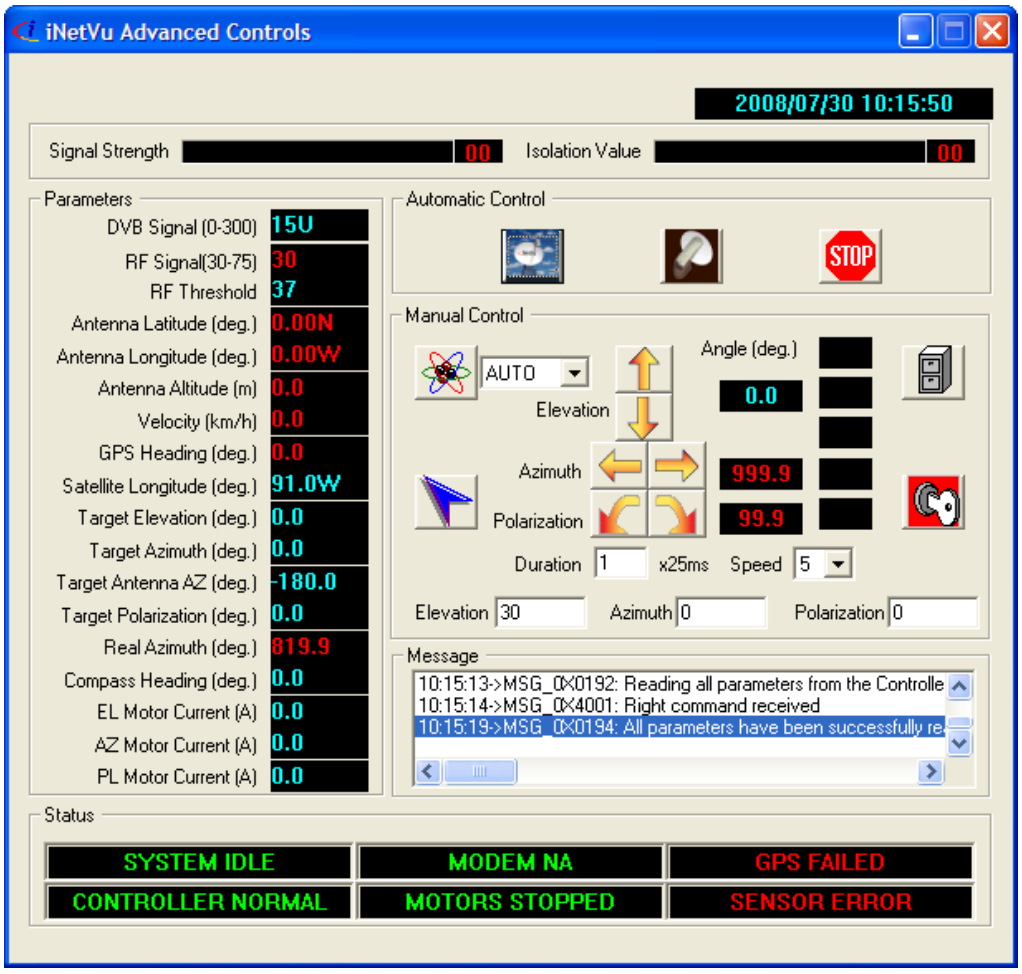


Fig. 48: Advanced Controls Menu

Signal Strength

A real-time Signal Quality Factor (SQF). A value obtained from the Satellite Modem when locked onto a signal. Using a red/yellow/green color-coated system, it denotes the strength of the received signal from the current satellite.

Should the Signal Strength be lower than 29 when locked on satellite, click **Find Satellite** again to re-acquire the signal.

Fig. 49: Signal Strength Display

Isolation Value

Denotes isolation to the current satellite transponder. This value is not an indication of signal strength when transmitting a signal.

The Isolation Value will be 100 upon receiving an Rx Lock Status.

Fig. 50: Isolation Value Display

Date/Time

Current date and time from as received from the GPS Antenna. Should the GPS experience any problems, the alternate source is your PC internal date and time.

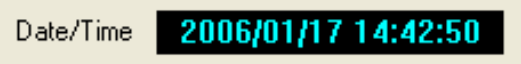


Fig. 51: Date/Time Display

Automatic Control

Fig. 52: Automatic Control Buttons

Find Satellite
Automatically finds and locks onto the satellite signal by communicating with the Satellite Modem and using the GPS coordinates, the compass heading, and internal parameters of the Satellite Modem. Typically, it takes approximately 3-5 minutes to find satellite.

If the Antenna is already pointed on the satellite, clicking **Find Satellite** will re-peak the Antenna onto the signal.

Stow Antenna
Re-centers the antenna and lowers it into the stowed position.

Stop Operation
Halts all motor movements and disrupts all communication between iNetVu™ Mobile System components.

Angle and Limit Switch Indicators
Displays real-time angles and Limit Switch status

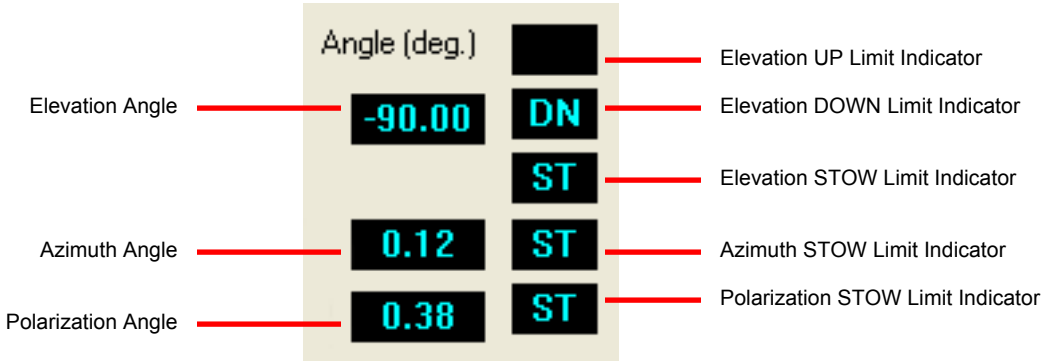


Fig. 53: Angle and Limit Switch Indicators

- When the Elevation STOW Limit Indicator is ON, the Elevation Angle will change to "–90", to denote that the iNetVu™ Mobile Platform is now stowed. It will remain "-90" until the indicator turns OFF.

- For iNetVu™ 1200 Mobile Platforms, the Polarization Stow Indicator will ALWAYS be ON.

- A YELLOW-colored "F" will appear if a Limit Switch has been disabled in the Advanced Maintenance Menu.

- If the Polarization is disabled (for circular signal frequency bands such as Ka-Band or X-Band), the Polarization Angle will display 0.00 and the Polarization Stow Switch must be closed.

Manual Movement

Elevation Up / Elevation Down

Azimuth Left/ Azimuth Right

Polarization Counter-Clockwise / Polarization Clockwise

Using the Duration and Speed parameters, the Manual Movement Buttons allow you to move the antenna in six (6) directions. For the correct point of reference for the directional movements, you must be facing the Mobile Platform's Reflector.

Fig. 54: Orientation Reference for Azimuth and Polarization

Duration
Length of time of Manual Movement using increments of 50ms

Speed
Motor Speed of Manual Movement

4 = Slowest, 9 = Highest

Fig. 55: Duration and Speed Input for USER Mode (Top) and CONFIG Mode (Bottom)

Enable/Disable ACP
Enables/Disables the ACP (Automatic Cross-Pol Testing), and M-ACP (Manual Cross-Pol Testing)

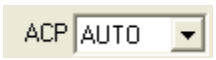


Fig. 56: ACP Option Selection

To Enable ACP, select “AUTO” or “MANUAL” from the ACP drop down list and click on the ‘Enable/Disable ACP’ Button to initiate.

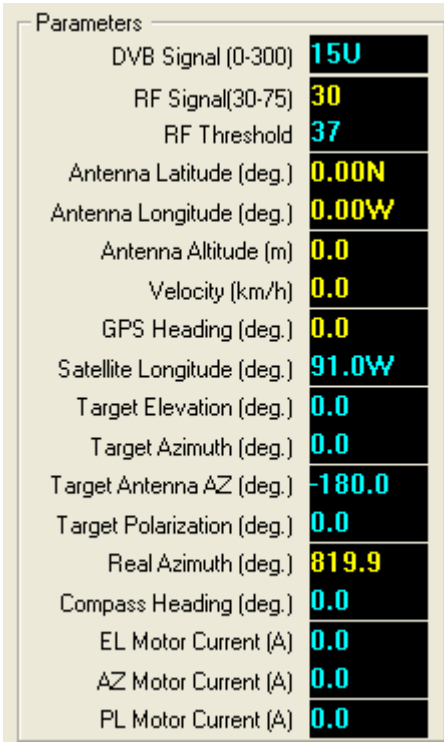
To Stop ACP testing, select “STOP” from the ACP drop down list, and click on the Enable/Disable ACP Button to initiate.

Deploy Antenna
Automatically moves antenna to the manually entered Elevation, Azimuth and Polarization angles.

Fig. 57: Deploy Antenna Input Values

Enable/Disable Transmitter
Automatically Enables or Disables the Transmission process. Background will turn red when transmitter is disabled, and green when the transmitter is enabled.

DVB Signal (0-300)
DVB Signal received from the DVB Tuner.



RF Signal (30-75)
Displays the real time RF Signal throughout the acquisition process.

RF Threshold (30-75)
Used in RF mode search for determining proper satellite frequency.

Antenna Latitude/Longitude
GPS Coordinates acquired from the GPS Antenna or manually overridden values.

Antenna Altitude
Altitude of antenna above sea level based on the GPS Antenna.

Velocity
The current velocity of the antenna is determined based on any changes in the GPS Coordinates.

Should the GPS Coordinates change, the iNetVu™ Mobile Software will calculate the velocity.

GPS Heading
When in the Mobile Platform is moving laterally, the GPS Coordinates change in real-time. Based on the changing GPS Coordinates, the directional heading is calculated.

Satellite Longitude
Longitude of the Satellite which the iNetVu™ Mobile Software has been configured to.

Refer to the Maintenance menu to modify the Satellite Longitude.

Target Elevation
Calculated Elevation Angle that the Antenna must point in order to locate the desired Satellite.

Target Real Azimuth
Calculated Azimuth Angle that the Antenna must point in order to locate the desired Satellite in reference to True North.

Target Antenna Azimuth
Calculated Azimuth Angle that the Antenna must point in order to locate the desired Satellite in reference to the Mobile Platform's center position.

Target Polarization
Calculated Polarization Angle that the Antenna must be in order to find the desired Satellite.

Real Azimuth
Azimuth Angle in reference to True North.

Compass Heading
Orientation of the Mobile Platform.

This value is only read during the Find Satellite, Check Compass, and Calibrate Compass processes.

North - 354°
West - 265°
South - 176°
East - 87°

Compass Reference Point

Fig. 58: Compass Orientation and Approximate Values

EL Motor Current
Current drawn for Elevation Motor (in Amperes)

AZ Motor Current
Current drawn for Azimuth Motor (in Amperes)

PL Motor Current
Current drawn for Polarization Motor (in Amperes)

Message Panel
Displays real-time status updates, system messages, and error codes.

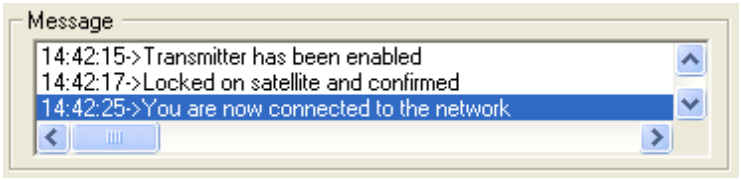

Message
14:42:15->Transmitter has been enabled
14:42:17->Locked on satellite and confirmed
14:42:25->You are now connected to the network

Fig. 59: Message Panel

Status Panel
The Status Panel describes system operations that are either imminent, taking place, or the current status of that component. The Status Panel is located at the bottom of the Basic Controls and Advanced Controls menus, and has a set of four and six message blocks, respectively.

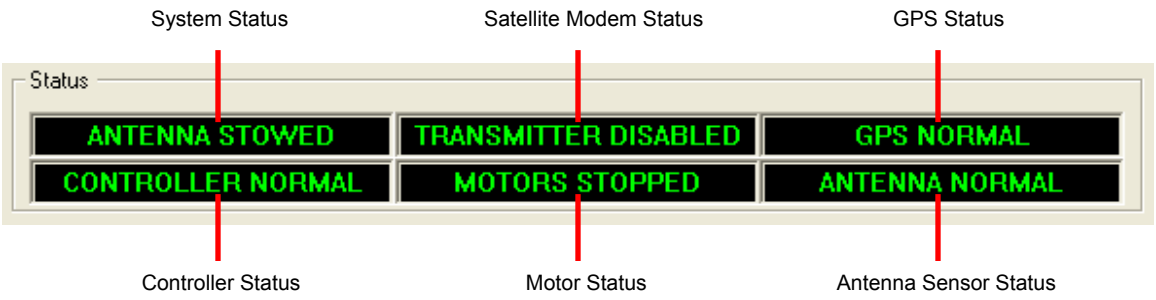


Fig. 60: Advanced Controls - Status Panel

The indicators notify the user of any actions taking place with a combination of color-coated messages.

- Solid "GREEN" messages indicate a stable and normal condition for that component.
- Flashing or solid "LIGHT BLUE" messages indicate a change in status occurring that the user should be aware of.
- Flashing "RED" and "YELLOW" messages indicates a problem with that component.

Should the entire Status Panel flash “RED” and “YELLOW”, a communication failure between the PC and the iNetVu™ Controller has occurred. Ensure that the Controller is powered, and that all USB drivers and cables (USB or Serial) are installed properly.

System Status
Displays current system environment

- **System Running**
  Software is currently booting.
- **System Idle**
  No operations are currently being performed.
- **System Online**
  iNetVu™ system has found and locked onto the satellite, and is now ready for surfing the Internet.
- **ACP Testing**
  ACP Testing is being performed.
- **Skew Adjusting**
  Polarization adjustment for receiving the optimal Signal Strength. Polarization will rotate in both directions to locate the 3dB drop in Signal Strength, and then re-center itself using the best possible Polarization Angle.
- **Manual Operation**
  Manually controlled movement via Advanced Controls menu has been detected.
- **Mount Testing**
  System test or demo being performed via System Test and Demo menu.
- **Peaking on Satellite**
  System makes minor adjustments in positioning in order to receive optimal Signal Strength.
- **AZ Calibration**
  Azimuth Calibration is being performed.
- **PL Calibration**
  Polarization Calibration is being performed.
- **EL Calibration**
  Elevation Calibration is being performed.
- **CP Calibration**
  Compass Calibration is being performed.
- **Going to Position**
  An automatic movement command has been initiated (i.e. Find Satellite or Deploy Antenna) and the antenna is moving into the designated position.
- **Searching Satellite**
  Antenna is performing a search pattern to locate the satellite.
- **Stowing Antenna**
  Antenna is being stowed.
- **Antenna Stowed**
  Antenna is currently stowed.
- **Unknown Status**

Satellite Modem Communication Status
Indicates the Transmitter status and displays any issues in communication with the Satellite Modem

- **Checking Modem**
  Verifying Satellite Modem's current status
- **Transmitter Enabled**
  Indicates that the transmitter has been enabled.
- **Transmitter Disabled**
  Indicates that the transmitter has not been enabled.
- **Transmitter Standby**
  Transmitter becomes idle during the ACP Test.
- **Modem Failed**
  A communication failure with the Satellite Modem has been detected.

GPS Status
Displays condition of the GPS signal

- **GPS Normal**
  GPS signal is being received from the GPS Antenna.
- **GPS Failed**
  GPS signal is not being received from the GPS Antenna.
- **GPS Searching**
  iNetVu™ Mobile Software attempts to detect a GPS signal from the GPS Antenna for 2 minutes.
- **GPS Override**
  GPS coordinates have been manually overridden from the Maintenance menu.

Controller Status
Displays communication status between the PC and the iNetVu™ Controller

- **Controller Normal**
  Indicates normal communication status between the Controller and the PC
- **Controller Failed**
  A failure in communication between the Controller and the PC has been detected.

Motor Status
Displays the movement of the 3-axis motors: Elevation, Azimuth, and Polarization

- **EL Moving UP / DN**
  Elevation Motor is moving in the respective direction
  (UP = Up, DN = Down)
- **AZ Moving Left / Right**
  Azimuth Motor is moving in the respective direction
- **PL Moving CCW / CW**
  Polarization Motor is moving in the respective direction
  (CCW = Counter Clock-Wise, CW = Clock-Wise)
- **Motor Unknown**
  Motor Status cannot be detected.

Antenna Status
Displays any relevant information regarding the Limit Switches and Potentiometers and/or Inclinometer.

- **Antenna Normal**
  Limit Switches are ON/OFF in the correct relation to the Elevation, Azimuth and Polarization Angles.
- **Antenna Failed**
  Limit Switches are NOT ON/OFF in the correct relation to the Elevation, Azimuth and Polarization Angles.
- **Antenna Unknown**
  Mobile Platform cannot be found. Ensure that the iNetVu™ Controller is functioning and that all cables are connected should this indicator appear.

7.2.2. Maintenance

The Maintenance menu allows users to configure the communication medium between the Satellite Modem and iNetVu™ Mobile Software, iNetVu™ Controller and iNetVu™ Mobile Software, as well as various System parameters for optimal performance.

The Maintenance menu allows users to set the Satellite's name and orbital slot, conduct maintenance tests/processes, override parameters, and run a system diagnosis check.

Click **SEND** if any modifications are made.

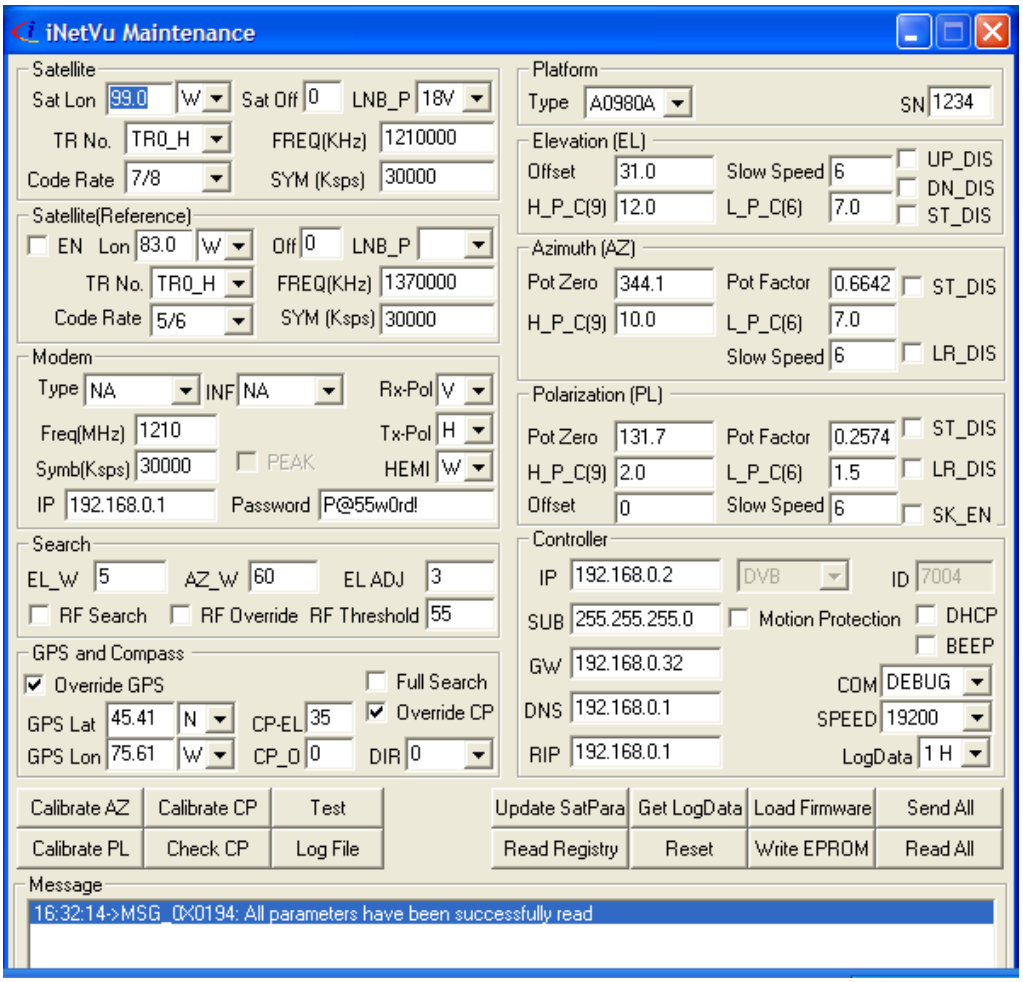

iNetVu Maintenance
Satellite
Sat Lon 99.0 W Sat Off 0 LNB_P 18V
TR No. TR0_H FREQ(KHz) 1210000
Code Rate 7/8 SYM (Ksps) 30000
Satellite(Reference)
EN Lon 83.0 W Off 0 LNB_P
TR No. TR0_H FREQ(KHz) 1370000
Code Rate 5/6 SYM (Ksps) 30000
Modem
Type NA INF NA Rx-Pol V
Freq(MHz) 1210 Tx-Pol H
Symb(Ksps) 30000 PEAK HEMI W
IP 192.168.0.1 Password P@55w0rd!
Search
EL_W 5 AZ_W 60 EL ADJ 3
RF Search RF Override RF Threshold 55
GPS and Compass
Override GPS Full Search
GPS Lat 45.41 N CP-EL 35 Override CP
GPS Lon 75.61 W CP_O 0 DIR 0
Platform
Type A0980A SN 1234
Elevation (EL)
Offset 31.0 Slow Speed 6 UP_DIS DN_DIS ST_DIS
H_P_C(9) 12.0 L_P_C(6) 7.0
Azimuth (AZ)
Pot Zero 344.1 Pot Factor 0.6642 ST_DIS
H_P_C(9) 10.0 L_P_C(6) 7.0
Slow Speed 6 LR_DIS
Polarization (PL)
Pot Zero 131.7 Pot Factor 0.2574 ST_DIS
H_P_C(9) 2.0 L_P_C(6) 1.5 LR_DIS
Offset 0 Slow Speed 6 SK_EN
Controller
IP 192.168.0.2 DVB ID 7004
SUB 255.255.255.0 Motion Protection DHCP BEEP
GW 192.168.0.32 COM DEBUG
DNS 192.168.0.1 SPEED 19200
RIP 192.168.0.1 LogData 1 H
Calibrate AZ Calibrate CP Test
Calibrate PL Check CP Log File
Update SatPara Get LogData Load Firmware Send All
Read Registry Reset Write EPROM Read All
Message
16:32:14->MSG_0X0194: All parameters have been successfully read

Fig. 61: IMS 7000 Maintenance Menu

7.2.2.1. Satellite Parameters

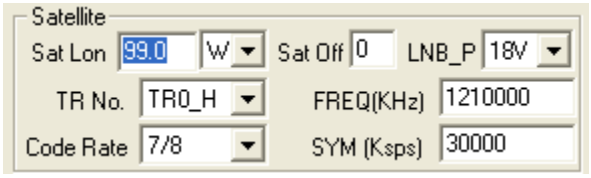


Fig. 62: Maintenance – Satellite Parameters

Sat Lon

Orbital slot / Longitude of the desired Satellite. The **Find Satellite** command will use this value when attempting to find and lock onto a satellite signal.

Sat Pol Offset

Denotes Transmit Polarity and may be altered to accommodate any offset ranged -90° to +90°

Generally in North America and most areas around the world

1200/1800 Platforms – Horizontal Receive (Sat Pol Offset = 0), Vertical Receive (Sat Pol Offset = 90)
740/980 Platforms – Sat Pol Offset = 0 considering OMT is adjusted Manually. (See Platform Setup and Maintenance Manual for instructions on how to adjust the OMT based on polarity)

LNB Power (V)

In cases where the LNB requires more power then the modem can provide, or if the user would like to power the LNB from the controller, or if the user would like to find satellite without the use of a modem, this option allows for power from the controller to be supplied to the LNB through the RX IN cable from the controller to the platform itself.

DIS – will disable this option, and provide power to the LNB straight from the modem. In this case, a splitter must be used for the RF connection as depicted in the figure below.

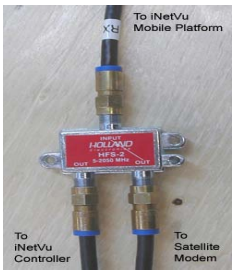


Fig. 63: RF Cable Setup for DIS selection

7000 Controller Power Output Range Option Capabilities: **13, 14, 18, 19, 20, 21 V @ 500mA (max)**

If the user chooses to power the LNB from the controller, he/she should verify the power/voltage range requirements of the LNB in use, and configure the iNetVu™ 7000 Controller according to those power/voltage requirements.

TR No. (Transponder Number)

There are Six (6) Transponder values in the 7000 Controller for each satellite.

Transponder 0-2 (TR0_H – TR0_H) are horizontal receive
Transponder 3-5 (TR3_V –TR5_V) are vertical receive.

The user may override the default values saved in the controller with his/her transponder information (frequency, symbol rate, FEC rate)

Frequency (KHz), Code Rate, Symbol Rate (Ksps)

The frequencies listed have been converted to L-band from Ku-band, and the ranges are 950000-2150000 KHZ, based on a LO frequency of 10750 MHZ.

The user may select from the six (6) available transponders saved in the 7000 Controller, which are specific to each satellite, or he/she may also enter valid transponder data manually.

DVB will base satellite acquisition on three satellite transponder parameters, them being:

Frequency 1 (KHz)
L-Band Receive Frequency

Symbol Rate 1 (Ksps)
Symbol Rate of receive signal

Code Rate
FEC Rate of receive signal

7.2.2.2. Reference Satellite Parameters

The reference satellite option is useful when the user cannot find a DVB transponder on the desired target satellite. The user may select a reference satellite with a known DVB Transponder. The iNetVu™ System will lock onto the reference satellite, and then pivot from that point to the desired target satellite, and peak on the modem signal.

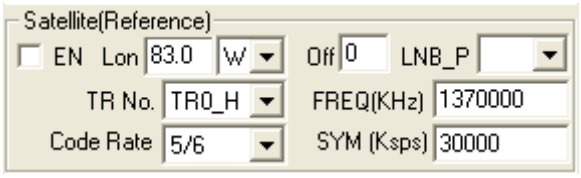


Fig. 64: Maintenance – Reference Satellite Parameters

EN

If this checkbox is selected, the Reference Satellite Option becomes active. If this box is not selected, all the information in this Reference Satellite Section becomes irrelevant.

Lon

This field represents the Orbital slot / Longitude of the Reference Satellite. The **Find Satellite** command will use this satellite as a pivot point to lock onto the target satellite.

Off (Sat Pol Offset)

Denotes Transmit Polarity and may be altered to accommodate any offset ranged -90° to +90°

Generally in North America and most areas around the world

1200/1800 Platforms – Horizontal Receive (Sat Pol Offset = 0), Vertical Receive (Sat Pol Offset = 90)
740/980 Platforms – Sat Pol Offset = 0 considering OMT is adjusted Manually. (See Platform Setup and Maintenance Manual for instructions on how to adjust the OMT based on polarity)

LNB Power (V)

The user may power the LNB with 13-21 Volts when searching for target satellite, or use a splitter and power the LNB straight from the modem.

See section 7.2.2.1 for more detail on LNB Power.

TR No. (Transponder Number)

There are Six (6) Transponder values in the 7000 Controller for each satellite.

Transponder 0-2 (TR0_H – TR0_H) are horizontal receive
Transponder 3-5 (TR3_V –TR5_V) are vertical receive.

The user may override the default values saved in the controller with his/her transponder information (frequency, symbol rate, FEC rate) for the reference satellite. The iNetVu™ system will use this transponder information to locate the reference satellite, and pivot to the target satellite.

Frequency (KHz), Code Rate, Symbol Rate (Ksps)

The frequencies listed have been converted to L-band from Ku-band, and the ranges are 950000-2150000 KHZ, based on a LO frequency of 10750 MHZ.

The user may select from the six (6) available transponders saved in the 7000 Controller, which are specific to each satellite, or he/she may also enter valid transponder data manually.

DVB will base satellite acquisition on three satellite transponder parameters, them being:

Frequency 1 (KHz)
L-Band Receive Frequency

Symbol Rate 1 (Ksps)
Symbol Rate of receive signal

Code Rate
FEC Rate of receive signal

7.2.2.3. Modem Parameters

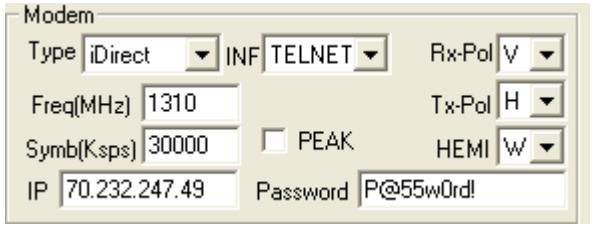


Fig. 65: Maintenance – Modem Parameters

Type

The user must select the service in use from this drop down menu for proper modem to controller connectivity. The services currently provided are:

- **iDirect**
- **Hughes**
- **Viasat**
- **NA – Stand Alone DVB transponder finder**

INF (Interface)

The user may select the interface used for modem to controller communication establishment. There are currently two options:

- HTTP
- NET – Telnet Interface
- COM – Console Port Interface

Freq (MHz)

Represents the required Frequency of the VSAT modem. This is usually applied to Hughes Net service. Other services such as iDirect do not require the modem frequency to find satellite.

Symb (Ksps)

Represents the required Symbol Rate of the VSAT modem. This is usually applied to Hughes Net service. Other services such as iDirect do not require the modem symbol rate to be entered to find satellite.

Tx-Pol

Transmit Polarization set in the satellite modem

Rx-Pol

Receive Polarization set in the satellite modem

Note: For Hughes Net service the Modem Frequency, Symbol Rate, Receive and Transmit Polarization must match those set in the Satellite Modem.

Hemisphere

Hemisphere the modem is operating from. For instance, North American operating modems would be set to “W”, representing western hemisphere. This parameter is mainly used for Hughes Net service.

IP

This area is reserved for the modem IP address.

Password

Some modems require a password to access their interface. The default password set is “P@55w0rd!” For modems that do not require a password, this field is irrelevant to the communication status between the modem and the controller and will not effect the communication establishment. For modems that have a blank password, this field should be left blank.

7.2.2.4. Search Parameters

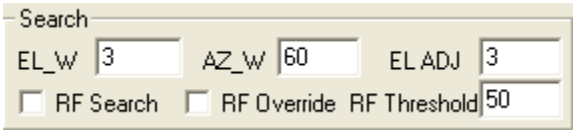


Fig. 66: Maintenance – Search Parameters

EL Window / AZ Window
The Search Window is the area of the sky which the iNetVu™ Mobile System will search for the desired Satellite. It uses a rectangular window and searches for the Satellite using smaller concentric windows until the desired Satellite is found. The Search Window range may be manually changed from the default settings which iNetVu™ uses to find the satellite should the desired Satellite cannot be found.

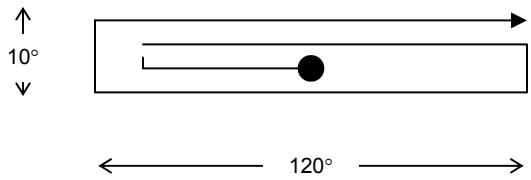


Fig. 67: Satellite Search Window

The default Azimuth (Horizontal) range is 60° on each side of the Target Point and the default Elevation (Vertical) range is 5° on each side of the Target Point.

Increasing the size of the Search Window will increase the ability to find the desired Satellite, although increasing the Search Window will lengthen the search time.

EL ADJ GAP (Elevation Adjustment Gap)

Parameter used to determine the small incremental adjustments required for a more accurate satellite search. Decreasing this value will add accuracy to the Search Window, but will increase the search time. The elevation angle will adjust by the specified number of degrees from the calculated angle while searching on an included surface.

RF Override
Enables the RF Threshold to be manually overridden.

Search on RF

This option will allow the user to base satellite searching and peaking strictly on RF instead of DVB. This method of searching could be used when the user is having a hard time finding the transponder data for a specific satellite, or if no transponder data exists.

RF Threshold

Used by the iNetVu™ Mobile Software to begin a signal optimization process for peaking on a Satellite signal after initially locating it. Setting the RF Threshold value too low will result in an inability to acquire a reliable signal.

7.2.2.5. GPS and Compass

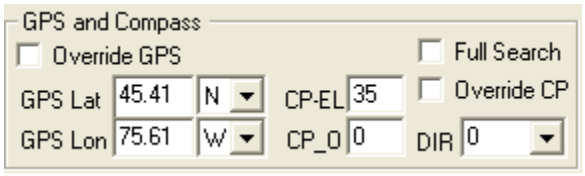


Fig. 68: Maintenance – GPS and Compass Parameters

GPS Lat

This field represents the Latitudinal GPS coordinates of the iNetVu™ system.

GPS Lon

This field represents the Longitudinal GPS coordinates of the iNetVu™ system.

Override GPS Checkbox

Enables the GPS coordinates to be manually overridden. This should only be enabled in the event that the GPS Antenna is malfunctioning and the user has a reliable, alternate source for coordinates. If this box is checked, the GPS coordinates should be manually entered in the 'GPS Lat', and the 'GPS Lon' fields described.

***Note*:** If you have overridden the GPS coordinates, they will have to be updated if the Mobile Platform has moved to a new location since the overridden values will no longer be accurate.

Override CP Checkbox

The Compass is pre-calibrated by a professional installer at the time of system installation.

A number of factors can contribute to the iNetVu™ compass to produce an incorrect reading such as being parked in close proximity to a large metallic object. Should the compass heading be inaccurate by more than 20 degrees, you may need to re-calibrate it, or select this option and override the compass. Ensure that you are using a reliable alternate source.

After enabling Override, you may enter the vehicle's direction as indicated on your alternate compass. Keep in mind that the base of the iNetVu™ Mobile Platform is oriented to the rear of your vehicle. When taking the direction on the alternate compass, take the direction of your reading while facing the front of the vehicle, and use this orientation for the **Vehicle Direction** field.

North - 354°
West - 265°
South - 176°
East - 87°

Fig. 69: Compass Orientation and Approximate Values

Full Search

Performs a full 360º Azimuth search for the desired Satellite. This process may take up to 30 minutes to find and lock onto Satellite.

CP-EL (Compass Elevation Reading Angle)

Number of degrees that the Antenna requires to be elevated to ensure that the compass is level and is able to acquire an accurate compass reading.

	PLATFORM TYPES	
	A1200C	A0980B
COMPASS READING ELEVATION	32	35

	PLATFORM TYPES		
	A0740B	A1800A	A0660A
COMPASS READING ELEVATION	25	32	25

Fig. 70: Compass Reading Elevation Default Values

DIR (Direction)

The direction the front of the Mobile Platform is rotated in reference to True North. In order to override the compass, the user must know where true north is located to enter the direction.

Offset

The number of degrees the Mobile Platform is rotated in reference to True North.

7.2.2.6. Controller Parameters

This sub-section contains data concerning the relevant IP addresses of the iNetVu™ 7000 Controller.

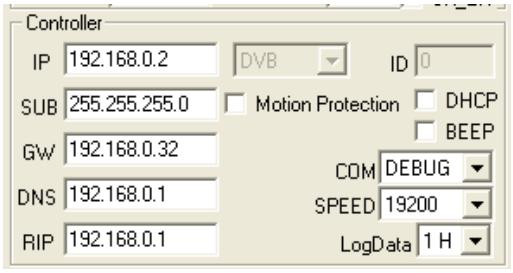


Fig. 71: Maintenance – Controller Parameters

ID

This ID field is the Controller ID number located on the bottom portion of the controller. The ID is the last four digits of the controller serial number.

IP

The IP address assigned to the iNetVu™ 7000 Controller.

GW

The Gateway IP address used by the iNetVu™ 7000 Controller.

SUB

The Subnet Mask IP Address used by the iNetVu™ 7000 Controller for PC and modem connectivity.

COM

This Drop Down Menu allows the user to define the functionality of the serial interface on the iNetVu™ 7000 Controller. The following are the options to select from:

- **DEBUG** -Used for internal debugging purposes.
- **MODEM** -Used as a communication medium if the specified modem supports serial interface communication.
- **GPS_OUT** **-** Used to pass GPS coordinates from the controller to the modem using the *NEMA* standard over the serial communication interface.

SPEED (bps)

The user may define the bit rate of the serial communication interface.

BEEP

This checkbox is used to either enable or disable the beeping noise when navigating the LCD interface on the iNetVu™ 7000 Controller.

UPLOAD

The user may choose to upload either 1 hour, 2 hours, or ALL (maximum of 12 hours) of the recorded log information from the controller to the PC.

DNS IP and Router IP (RIP) have not been implemented as of yet, and are under development. These fields can be left as is.

MOTION PROTECTION

The iNetVu™ Mobile Platform will automatically stow the antenna should it experience extreme motion, such as severe shaking caused by poor weather conditions.

DHCP

The iNetVu™ 7000 Controller could attain a dynamic IP address from a DHCP Server (i.e. router, modem, etc.) if this option is enabled.

7.2.2.7. Platform Parameters

Maintenance – Platform Parameters

Type

The user is capable of configuring the platform in use.

A66A - iNetVu™ A066A Mobile Platform (Ka Band)
A74B - iNetVu™ A740/A750B Mobile Platform (Ku Band)
A98A - iNetVu™ A980A Mobile Platform (Ku Band)
A12B - iNetVu™ A1200B Mobile Platform (Ku Band)
A12P - iNetVu™ A1200P Flyaway Platform (Ku Band)
A18A - iNetVu™ A1800A Mobile Platform (Ku Band)
A18B - iNetVu™ A1800B Mobile Platform (C Band)

Platform Serial Number

The user may enter the last four-digits of the platform serial number located next to the connector plate on the iNetVu™ Mobile Platform.

Fig. 72: Platform Identification

7.2.2.8. Elevation Parameters

The Elevation menu allows for the configuration of the elevation axis. Options include the elevation offset, as well as the axis limit functionality, slow speed setting, and current limits for fast and slow speeds.

Fig. 73: Maintenance - Elevation Parameters

Offset

The Elevation Offset is specific to each type of platform. It is the number of degrees at which the iNetVu™ Mobile Software will offset the reading from the Inclinometer in order to produce an accurate (+/- 2°) Elevation Angle.

	PLATFORM TYPES					
	A1200P	A1800A/ B/C/D	A1200C	A0980B	A0740B	A0660A
EL OFFSET	31.00	45.00	42.00	31.00	31.00	35.00

Fig. 74: Default Elevation Offsets. All values are + 2° after Target Calibration.

Slow Speed

The iNetVu™ software basis the default elevation motor slow speed on the platform size and type. See appendix 3, table 5 for details. The user may change this value, however changing such value could result in difficulty for satellite acquisition.

Limit Switches (UP_DIS, DN_DIS, ST_DIS)

Allows the enabling and disabling of the UP, DOWN, and STOW limits.

A check mark in the box implies the limit has been DISABLED. By default the boxes are left unchecked. Please be advised that disabling any of these limits should be done under the direct supervision of a c-com technical support representative.

Current Settings

H_P_C (9) and L_P_C (6) represent high platform current @ speed 9, and low platform current @ speed 6 respectively. A software controlled current protection for the Mobile Platform's elevation motors. For Motor Speeds that are not listed (Speed 1, 2, 4, 5, 7, 8), the Current Limit for those speeds is calculated using a percentage of the Current Limit

@ speed 6 and 9. See appendix 3, table 5 for the default current limits for all iNetVu™ Mobile Platforms.

- Current Limit 8 – 90% of Current Limit 9
- Current Limit 7 – 80% of Current Limit 9
- Current Limit 5 – 90% of Current Limit 6
- Current Limit 4 – 80% of Current Limit 6

7.2.2.9. Azimuth Parameters

The Azimuth menu allows for the configuration of the azimuth axis. Options include the setting of the pot zero, and the pot factor, as well as the axis limit functionality, the slow speed setting, and current limits for fast and slow speeds.

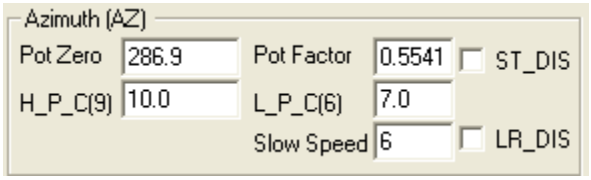


Fig. 75: Maintenance - Azimuth Parameters

Slow Speed

The iNetVu™ software basis the default azimuth motor slow speed on the platform size and type. See appendix 3, table 5 for details. The user may change this value, however changing such value could result in difficulty with satellite acquisition.

Limit Switches (ST_DIS, LR_DIS)

Allows for enabling and disabling the ST (STOW) and LR (Azimuth Left and Right) limits.

A check mark in the box implies the limit has been DISABLED. By default the boxes are left unchecked. Please be advised that disabling any of these limits should be done under the direct supervision of a C-Com Satellite Systems Inc. technical support representative.

Note: The LR limit is for future development purposes, and is not functional at the time of publication.

Current Settings

H_P_C (9) and L_P_C (6) represent high platform current (Amps) @ speed 9, and low platform current @ speed 6 respectively. A software controlled current protection for the Mobile Platform's elevation motors. For Motor Speeds that are not listed (Speed 1, 2, 4, 5, 7, 8), the Current Limit for those speeds is calculated using a percentage of the Current Limit @ speed 6 and 9. See appendix 3, table 5 for the default current limits for all iNetVu™ Mobile Platforms.

- Current Limit 8 – 90% of Current Limit 9
- Current Limit 7 – 80% of Current Limit 9
- Current Limit 5 – 90% of Current Limit 6
- Current Limit 4 – 80% of Current Limit 6

AZ Pot Zero

AZ Pot Zero is an A/D value from the potentiometer calculated upon azimuth calibration which physically determines where the iNetVu™ Mobile Software places Azimuth Angle 0°. The AZ Pot Zero may vary approximately +15% from the Default values (see appendix 3, table 5). The user may edit these values through this menu, however any changes may result in failure to recognize the correct 0° angle.

AZ Pot Factor

AZ Pot Factor is an A/D value from the potentiometer calculated upon azimuth calibration which allows the iNetVu™ Mobile Software to convert the A/D value of the Potentiometer into an equivalent angle. The AZ Pot Factor should vary approximately +15% from the Default values (see appendix 3, table 5). The user may edit these values through this window, however any changes may result in failure to recognize the correct azimuth angles.

7.2.2.10. Polarization Parameters

The Polarization menu allows for the configuration of the polarization axis. Options include the setting of the pot zero, and the pot factor, as well as the skew adjustment and stow limit functionality, the polarization offset, slow speed, and current limits for fast and slow speeds.

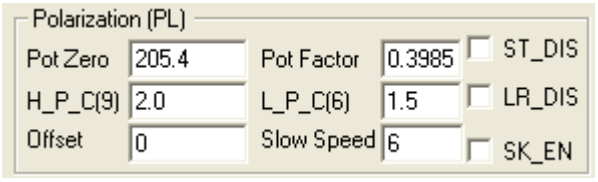


Fig. 76: Maintenance - Polarization Parameters

Limit Switches (ST_DIS, LR_DIS)

Allows the enabling and disabling of the ST (STOW), LR (Polarization Left and Right Limits), and SK (Skew adjustment) limits.

For the ST, and the LR limits, a check mark in the box implies the limit has been DISABLED. By default the boxes are left unchecked. Please be advised that disabling any of these limits should be done under the direct supervision of a c-com technical support representative.

The SK_EN (Skew Adjustment) represents the 3-db drop test to optimize the polarization angle. Checking this box will ENABLE the skew adjustment.

Note: The LR limit is for future development purposes, and is not functional at the time of publication.

Current Settings

H_P_C (9) and L_P_C (6) represent high platform current (Amps) @ speed 9, and low platform current @ speed 6 respectively. A software controlled current protection for the Mobile Platform's elevation motors. For Motor Speeds that are not listed (Speed 1, 2, 4, 5, 7, 8), the Current Limit for those speeds is calculated using a percentage of the Current Limit @ speed 6 and 9. See appendix 3, table 5 for the default current limits for all iNetVu™ Mobile Platforms.

- Current Limit 8 – 90% of Current Limit 9
- Current Limit 7 – 80% of Current Limit 9
- Current Limit 5 – 90% of Current Limit 6
- Current Limit 4 – 80% of Current Limit 6

PL Pot Zero

PL Pot Zero is an A/D value from the potentiometer that physically determines where the iNetVu™ Mobile Software places Polarization Angle 0°. The PL Pot Zero may vary approximately +15% from the Default values (see appendix 3). The PL Pot Zero is calculated during the Polarization Calibration process. The user may edit these values through this window, however any changes may result in failure to recognize the correct 0° angle.

PL Pot Factor

PL Pot Factor is an A/D value from the potentiometer which allows the iNetVu™ Mobile Software to convert the A/D value of the Potentiometer into an equivalent angle. The PL Pot Factor should vary approximately +15% from the Default values (see appendix 3). The PL Pot Factor is calculated during the Polarization Calibration process. The user may edit these values through this window, however any changes may result in failure to recognize the angle value.

Polarization Offset

By default this polarization-offset value is set to +0°. If there happens to be a requirement for a polarization offset, the user may manually enter this value at in this area.

Slow Speed

The iNetVu™ software basis the default polarization motor slow speed on the platform size and type. See appendix 3, table 5 for details. The user may change this value, however changing such value could result in difficulty for satellite acquisition.

7.2.2.11. Maintenance Menu Buttons

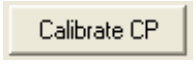
The following buttons are available in the maintenance menu for multiple purposes including, ease of use, troubleshooting, and calibration.

Calibrate AZ
Performs automated Polarization Calibration process.

i. Antenna will completely rotate counter-clockwise to the physical limit and temporarily record the A/D value from the Potentiometer.
ii. Antenna will completely rotate clockwise to the physical limit and temporarily record the A/D value from the Potentiometer.
iii. Based on the A/D values of the two (2) physical limits, and the range of motion for the Mobile Platform, the AZ Pot Factor is calculated.
iv. Antenna will center itself and attempt to locate the cut-off edges of the Azimuth Stow Switch.
v. After detecting at which angles the ST Switch turns OFF, the Azimuth zero position is calculated and the AZ Pot Zero is set at the zeroed A/D value.
vi. You will then be prompted to enter the Platform ID Number prior to finishing the Calibration Process.

Check CP
Tests the compass' heading and accuracy by rotating the antenna at 90° intervals and comparing the compass readings with the actual antenna's movement.

i. Antenna will center itself; move to the proper Elevation for reading the compass, then read the compass heading.
ii. Antenna will rotate 90° to each of the following positions and read the compass at each: 0°, 90°, 180°, -90°, 0°
iii. iNetVu™ Mobile Software will compare the compass heading values read at each position, and determine if they differ by approximately 90°.
iv. The Compass Check will display a message regarding the accuracy of the compass.



Calibrate CP
Automatically calibrates compass

i. Ensure that there are no metallic objects that could interfere with the Compass, and that the Mobile Platform is on level surroundings.

ii. Orient the Mobile Platform as depicted in the following figure. It is recommended that you use an external compass to be as accurate with the orientation as possible.

Fig. 77: Compass Orientation and Approximate Values

iii. The Antenna will now rotate in 90° intervals and attempt to calibrate the compass.
iv. A message prompt will appear to notify you that the Compass Calibration has been completed successfully or not.

Calibrate PL
Performs automated Polarization Calibration process.

i. Antenna will completely rotate counter-clockwise to the physical limit and temporarily record the A/D value from the Potentiometer.
ii. Antenna will completely rotate clockwise to the physical limit and temporarily record the A/D value from the Potentiometer.
iii. Based on the A/D values of the two (2) physical limits, and the maximum range of motion for the Mobile Platform, the PL Pot Factor is calculated.
iv. Antenna will center itself and attempt to locate the cut-off edges of the Polarization Stow Switch.
v. After detecting at which angles the ST Switch turns OFF, the Polarization zero position is calculated and the PL Pot Zero is set at the zeroed A/D value.
vi. You will then be prompted to enter the Platform ID Number prior to finishing the Calibration Process.

Demo / Test
Opens System Test and Demo menu screen

Log File
Automatically opens the iNetVu Data Log File in Notepad.

Load Firmware
Loads the `iNetVu_Box.s19` firmware file into iNetVu™ Controller from the iNetVu program folder.

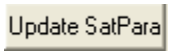
The update process is displayed on screen and will notify the user when the process is complete. The controller will be unavailable during this time.

Write EPROM
Sends and writes ALL the parameter's to the iNetVu™ Controller's EPROM.

Read Registry
Reads ALL parameters from the local registry and sets the values into the iNetVu™ Mobile Software

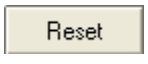
Send All
Sends ALL parameters to the controller's memory. The system will prompt the user and ask whether to save these parameters to the EPROM.

Read All
Reads ALL parameters from the iNetVu™ Controller's EPROM memory and sets the values into the iNetVu™ Mobile Software



Update SatPara
Loads all the Satellite Transponder information located in the "iNetVu70000_SatParam" text file, into the 7000 Controller. The user may modify the table with any DVB transponders that he/she would like saved in the 7000 Controller, and click on this button.

Get LogData
Uploads the log data from the 7000 Controller onto the user's PC. The user may select how much of the log file to upload from the Controller section of this maintenance menu. The maximum data a user may upload is 12 hours.



Resets the iNetVu™ 7000 Controller.

7.2.2.12. Maintenance Test Screen

Used for system tests, trouble-shooting, and for demonstrating the iNetVu™ Mobile System.

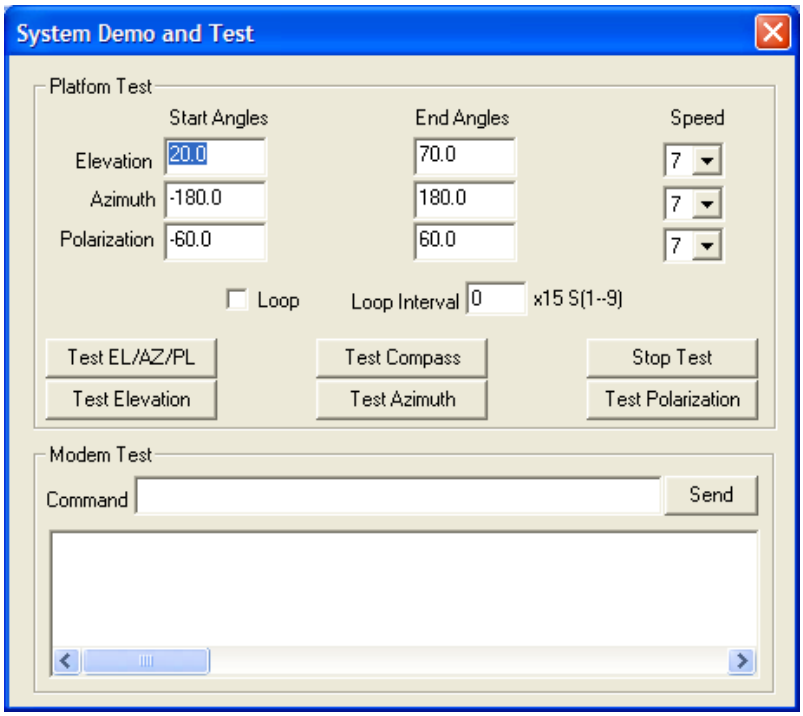


Fig. 78: Demo and Test Menu

Start Angles
Initial values for the test/demo sequence

End/Demo Angles
End values for the test/demo sequence

Speed
Speed of the motor during the test/demo sequence (4 – lowest, 9 – highest)

Loop the Test/Demo
Enables an infinite loop of the test/demo sequence

Loop Interval
Time between test/demo sequences

Test Compass
Positions Antenna to a level Elevation angle and updates compass heading.

Test Elevation
Moves dish to the values set in the Start Angle and End/Demo Angle fields

Test Azimuth
Moves dish to the values set in the Start Angle and End/Demo Angle fields

Test Polarization
Rotates dish to the values set in the Start Angle and End/Demo Angle fields

Test EL/AZ/PL
Moves and rotates to the values set in the Start Angle and End/Demo Angle fields

Stop Demo/Test
Halts all test/demo sequences

Modem Test

The user may enter certain modem commands, and click send. The 7000 will then read the response from the modem in the text area below the command line. Currently the commands supported are for iDirect service:

- laninfo
- tx power
- tx freq
- tx symrate
- tx cw
- rx power
- rx freq
- rx symrate

7.2.3. About

Displays information to the user about various sub-system components, as well as contact information for support and feedback.

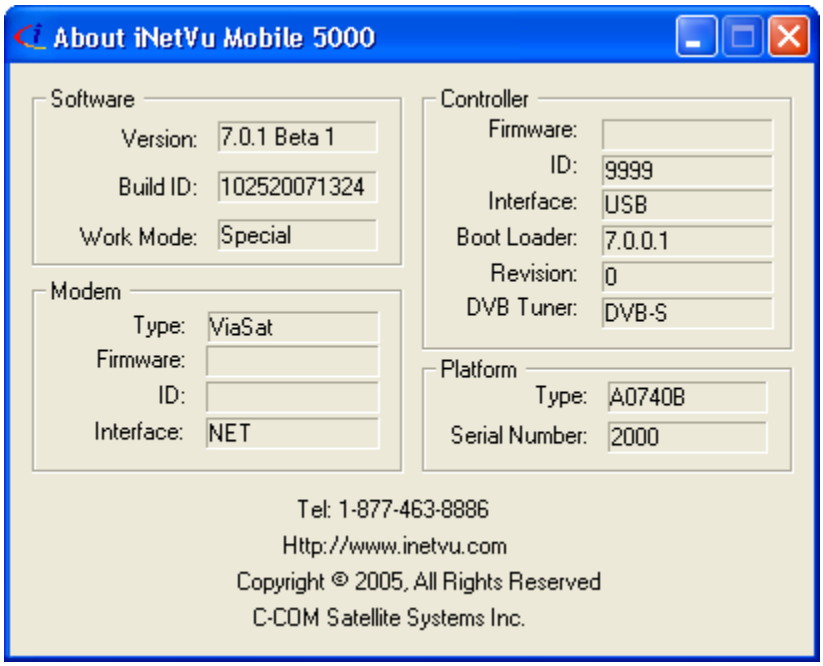
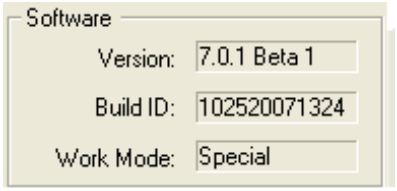


Fig. 79: About Menu

Software

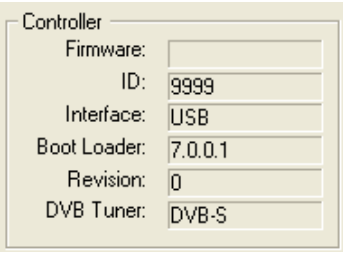
- **Version**
  iNetVu™ Mobile Software version



- **Build ID**
  Date of software release

- **Work Mode**
  Current Operation Mode

Controller



- **Firmware**
  iNetVu™ Controller's firmware version.

  For compatibility purposes, Controllers are pre-configured with the appropriate firmware for the accompanied software version.

- **Service/ ID**
  iNetVu™ Controller Serial Number ID.

  This field is supported for iNetVu™ Controller Firmware 4.2 and higher.

- **Interface**

  This field represents the means of communication between the iNetVu™ software, and the 7000 Controller.

- **Boot Loader**

  - 7.0.0.1 - USB and Network Interface supported. Serial connection is required when uploading

- **Revision**

  - Indicates the revision number of the current software version

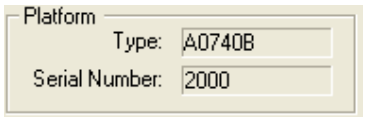
- **DVB Tuner**

  - Displays if a DVB Tuner is detected

Platform

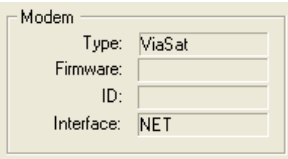
- **Type**
  Mobile Platform type and size

  A1800A, A1200B, A0950B, A0980B, A0740B, A0660A, A1200P
  - 1800 - 1.8m
  - 1200 - 1.2 m
  - A1200P – 1.2m Flyaway
  - 980 - 0.98 m
  - 950 - 0.95 m
  - 740 - 0.74 m
  - 660 - 0.66 m



- **Serial Number**
  Mobile Platform serial number

Modem



- **Type**
  Modem Type, corresponding to the service provided.

- **Firmware**
  Satellite Modem's firmware version.

- **ID**
  Satellite Modem's Hardware ID or Serial Number

- **Interface**
  Modem Interface to the iNetVu™ 7000 Controller.

8. iNetVu™ 7000 Controller Web Interface

Another method of communicating remotely with the 7000 Controller is through the web interface. It has the ability to communicate with the Satellite Modem, automatically find and lock onto a satellite and stow the antenna when completed. The user can also monitor real-time system parameters such as Signal Strength, GPS Coordinates, motor currents, as well as allowing the user the capability of manually moving the antenna and performing any maintenance tests and calibration tasks.

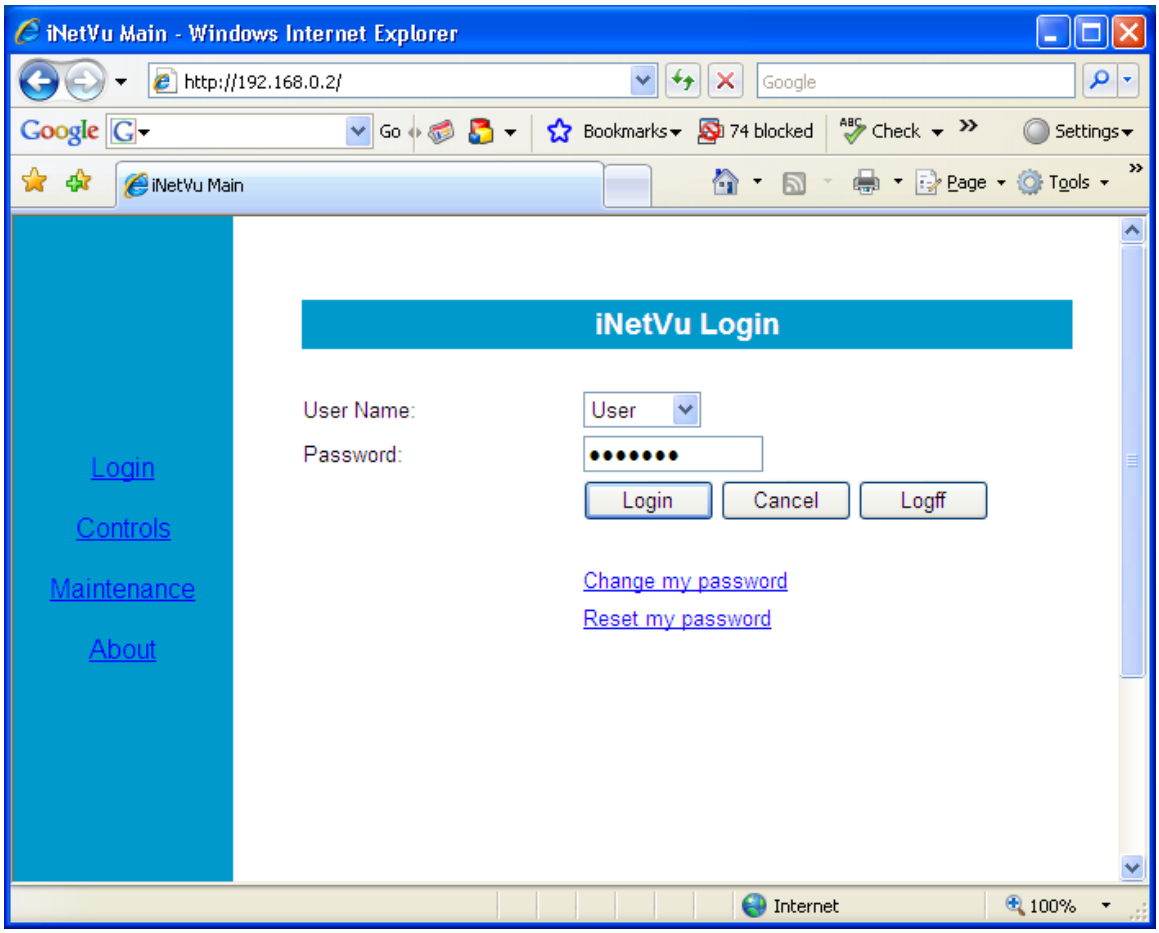
The **Web Interface** is similar to the 7000 Software, the difference being that it is accessed through a web browser by entering the controllers IP address in the URL bar once a network has been established between the controller and the PC.

8.1. Navigating Menus

To view the web interface, type in the IP address of the 7000 Controller in the web browser.

There are 4 options available:

- Login (default password: “password”)
- Controls
- Maintenance
- About
- Firmware Update
- Satellite Table Update



To reset the password, click on “**Reset my password**”, and enter “123456789” for the reset ID.

8.2. Controls

Similar to the iNetVu™ 7000 Software Controls Menu, the Web Interface Controls Screen allows the user to monitor system operations, and perform automatic as well as manual system functions. (See Section 7.2.1 for more details)

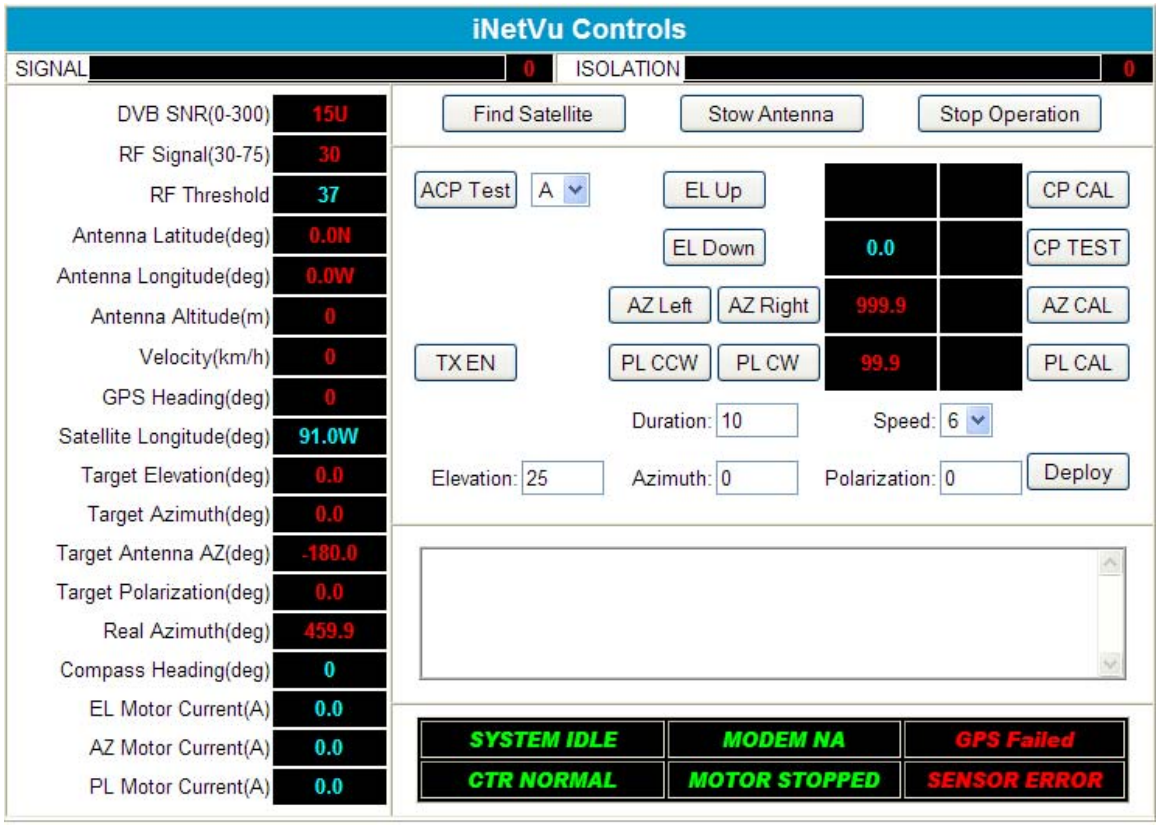


Fig. 80: Web Interface - Controls Screen

8.3. Maintenance

The Maintenance menu allows users to configure the communication medium between the Satellite Modem and iNetVu™ 7000 Web Interface, iNetVu™ Controller and iNetVu™ Web Interface, as well as various System parameters for optimal performance.

The Maintenance menu allows users to set the Satellite's name and orbital slot, conduct maintenance tests/processes, override parameters, and run a system diagnosis check.

The 7000 Controller Web Interface is similar to the iNetVu™ Software Maintenance Menu (See Section **7.2.2** For More Details)

Click **SEND ALL** if any modifications are made.

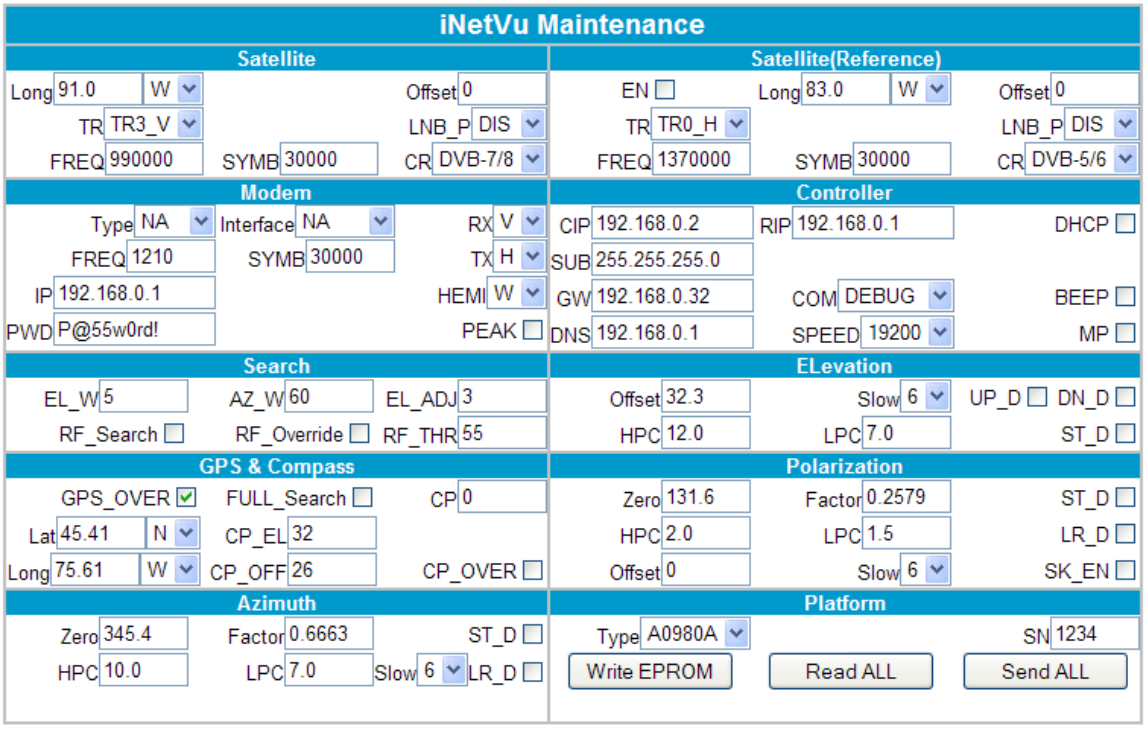


Fig. 81: 7000 Web Interface - Maintenance Screen

8.4. About

Displays information to the user about various sub-system components, as well as contact information for support and feedback. (See Section 7.2.3 for more detail on sub-components)

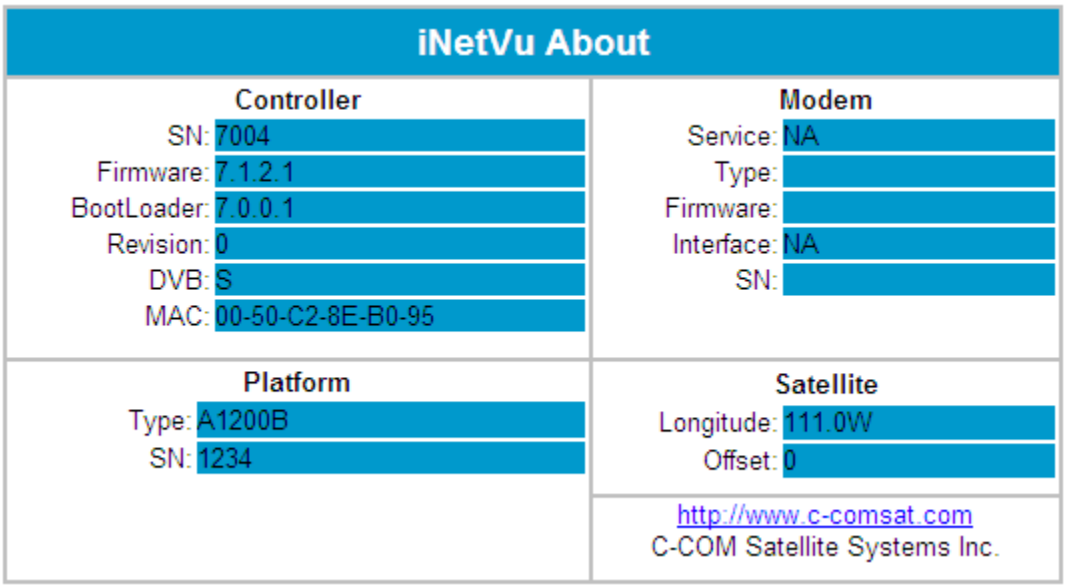


Fig. 82: Web Interface - About Screen

8.5. Firmware/Satellite Table Update

To access the firmware update, and satellite table update screen, perform the following steps:

1. After establishing a proper network connection between the controller and the PC, press the “reset” button on the 7000 Controller, and hold the “↑” and “↓” buttons on the front panel at the same time until you read “Firmware/Sat update” on the LCD screen.

2. Open up a web browser, and type the 7000 Controller IP address into the URL address field. The following screen should appear. Type in “password” in the Password field.

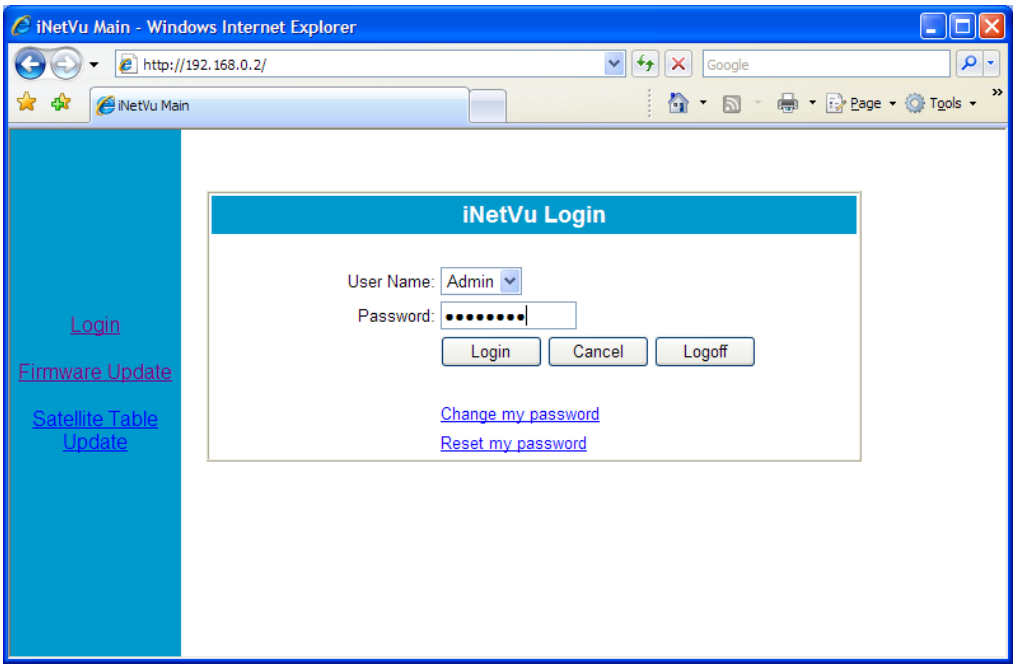


Fig. 83: Firmware/Satellite Table update screen

8.5.1. Firmware Update

To update the controller firmware click on the “Update Firmware” link on the left panel of the firmware/satellite table update web page. The following screen should appear:

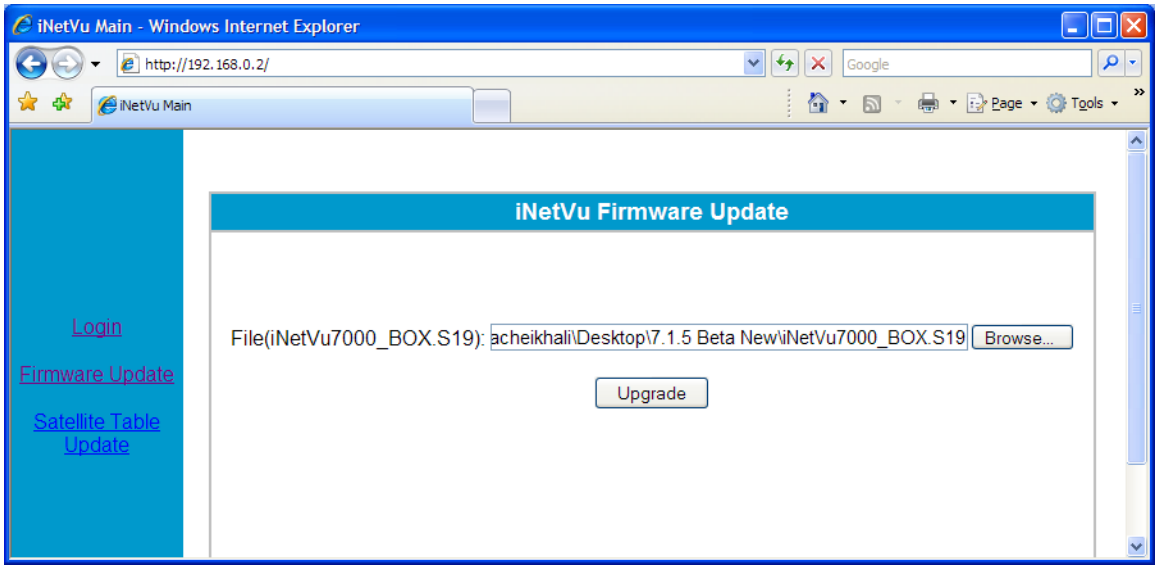


Fig. 84: Firmware Update Screen

To update the firmware via web page:

1. Browse for the proper firmware (.s19) file from your local disk drive.
2. Click on the “Upgrade” button.
3. The status bar will appear, and the Controller firmware should be updated within a few minutes.

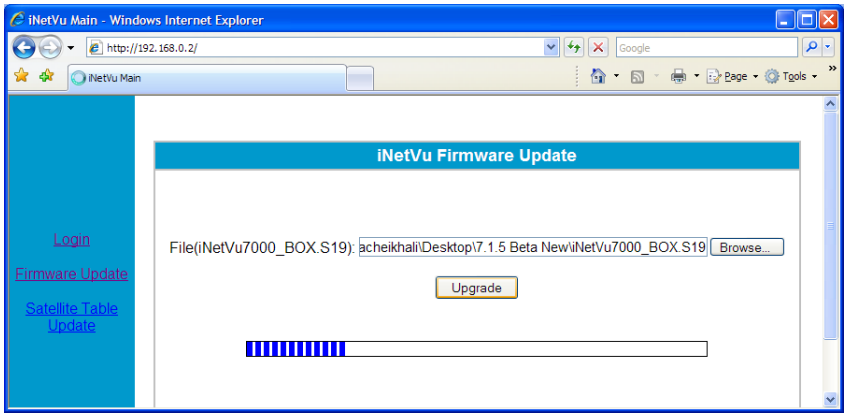


Fig. 85: Firmware Update – Progress bar

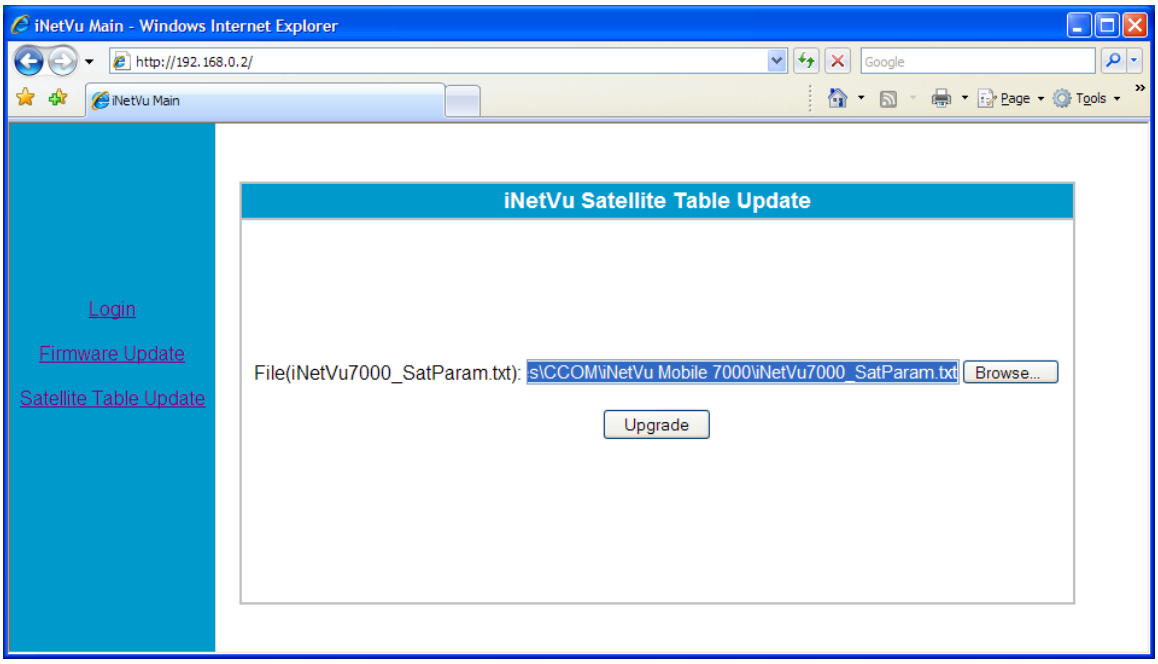
8.5.2. Satellite Table Update

In order to update the table containing the satellite transponder data, the iNetVu7000_SatParam.txt file must be manually changed. For example,

If a user wishes to add a transponder to satellite 91W, he/she would locate satellite 91W in the table, and replace one of the transponders with the new transponder data. Save the file once the changes have been made.

To upload the changed table to the controller:

1. Select “Satellite Table Update” from the left panel of the web page.



2. Browse for the modified “iNetVu7000_SatParam.txt”, and click on the “Upgrade” button. The controller should be updated within a few seconds.

9. Controller Connectivity

In order to interface directly with the iNetVu™ 7000 Controller, a Network Interface and a Web Interface are available.

The Network/Web Interface allows the user to operate the automatic functions such as Finding Satellite, Stowing the Antenna, and Stopping Operations, as well as monitoring System Status, real-time Motor Currents, and Signal Strength.

In order to access the **Network Interface**, simply install the iNetVu™ 7000 Software on your PC and place your PC on the same network as the 7000 Controller.

In order to access the **Web Interface**, place your PC on the same network as the 7000 Controller, and simply type in the IP address of the 7000 Controller into your web browser.

iNetVu™ 7000 Network Configurations:

Default IP Address:	192.168.0.2
Default Subnet Mask:	255.255.255.0
Default Gateway IP:	192.168.0.1

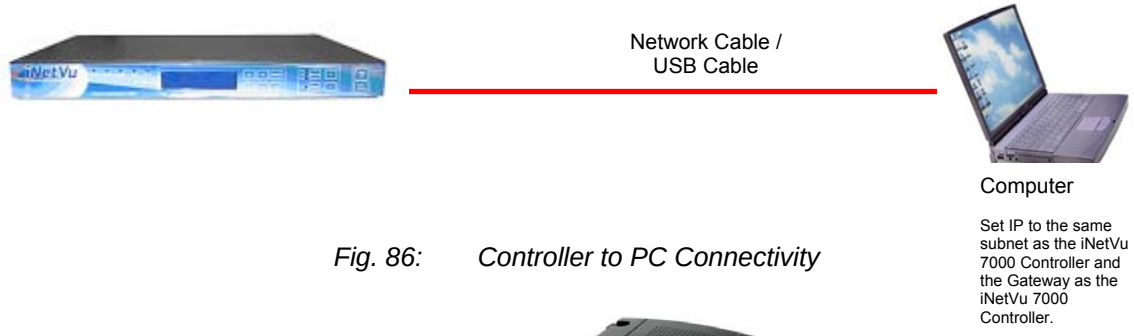

Network Cable /
USB Cable
Computer
Set IP to the same subnet as the iNetVu 7000 Controller and the Gateway as the iNetVu 7000 Controller.

Fig. 86: Controller to PC Connectivity

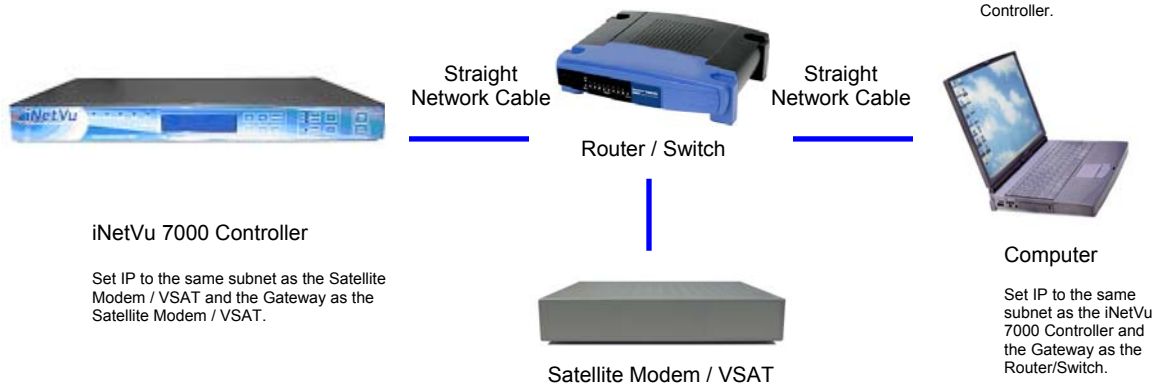

Straight
Network Cable
Straight
Network Cable
Router / Switch
iNetVu 7000 Controller
Set IP to the same subnet as the Satellite Modem / VSAT and the Gateway as the Satellite Modem / VSAT.
Computer
Set IP to the same subnet as the iNetVu 7000 Controller and the Gateway as the Router/Switch.
Satellite Modem / VSAT

Fig. 87: Controller to PC and Modem Connectivity via Network Interface

9.1. Network Configuration Example

*See appendix 3 for router configuration

Direct Connection to PC:

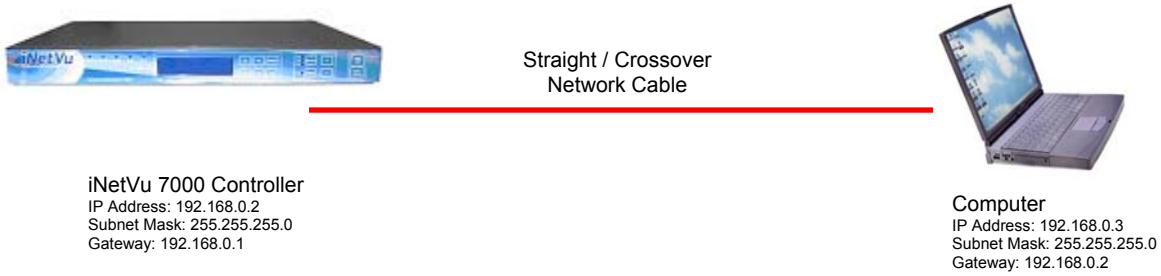


Fig. 88: IP Setup for Controller to PC Connectivity

Direct Connection to Satellite Modem/VSAT:
Satellite Modem / VSAT – Fixed IP Address

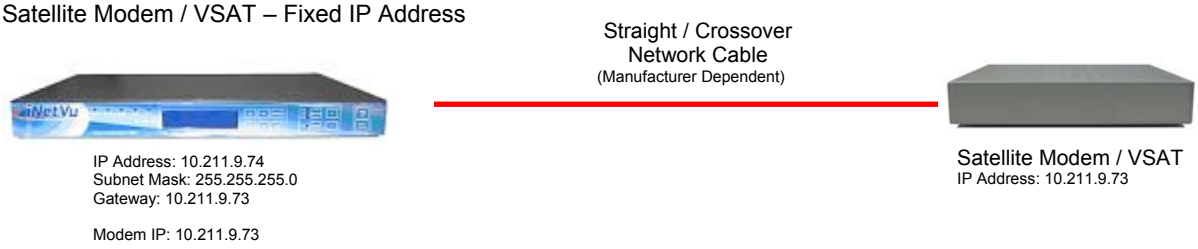


Fig. 89: Controller to Modem Network Setup

** Once the IP Address is assigned to the iNetVu™ 7000 Controller by the Satellite Modem / VSAT, you may check the LCD Menu to view the assigned IP Address.

Connection via Router/Switch:
Satellite Modem / VSAT – Fixed IP Address

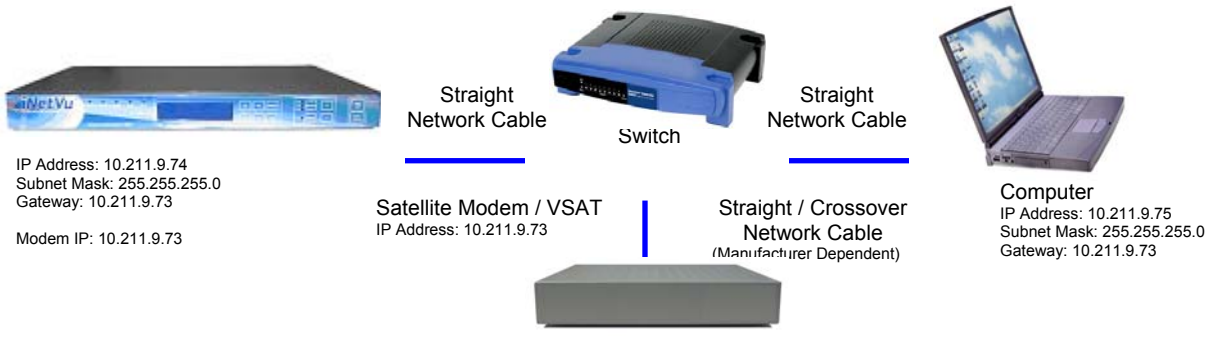
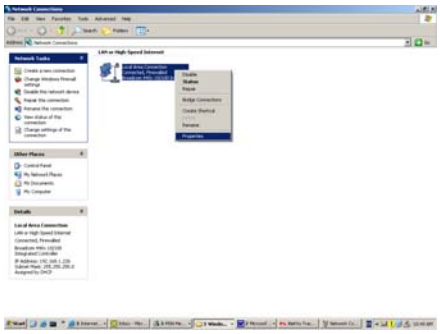
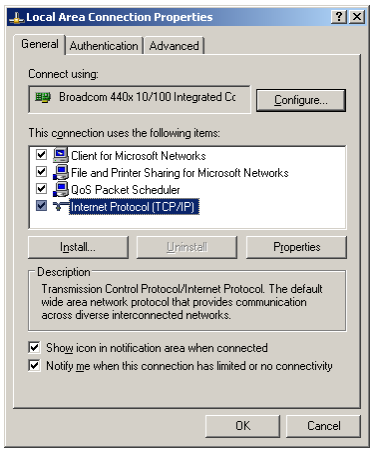


Fig. 90: Controller to Modem and PC network setup

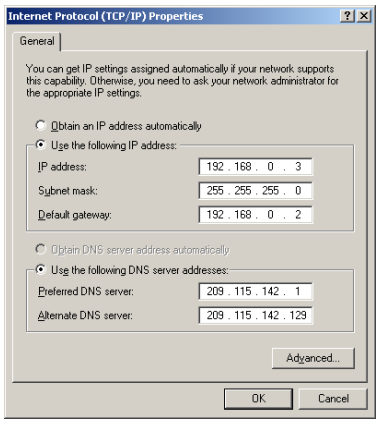
9.2. How to Set Network Configurations on your PC



1. Open **Network Connections**, right-click your network card, and select **Properties**.



2. Select **Internet Protocol (TCP/IP)** and click **Properties**.


Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 192 . 168 . 0 . 3
Subnet mask: 255 . 255 . 255 . 0
Default gateway: 192 . 168 . 0 . 2
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 209 . 115 . 142 . 1
Alternate DNS server: 209 . 115 . 142 . 129
Advanced...
OK
Cancel

3. <u>Direct Network Connection:</u>

   Set your PC to the same subnet as the iNetVu™ 7000 Controller, and the Default Gateway to the iNetVu™ 7000 Controller.

   The screenshot depicts this configuration.

   <u>Network Connection via Router/Switch:</u>

Dependent on Network Configuration (See previous section)

10. APPENDICES

10.1. Appendix 1: Default Limits and Configuration Data Tables

Compass Reading Elevation

	PLATFORM TYPES				
	A1800A /B/C/D	A1200C	A0980B	A0740B	A0660A
COMPASS READING ELEVATION	32	32	35	25	25

Table 1: Compass Reading Elevation Default Values

Elevation Offset

PLATFORM TYPES						
	A1800A/ B/C/D	A1200P	A1200C	A0980B	A0740B	A0660A
EL OFFSET	45.00	31.00	42.00	31.00	31.00	35.00

Table 2: Default Elevation Offsets. All values are ± 2° after Target Calibration.

AZ Potentiometer

	PLATFORM TYPES					
	A1800A/ B/C/D	A1200P	A1200C	A0980B	A0740B	A0660A
AZ POT ZERO	280.7808	140.5	282.88	342.17	342.17	342.17
AZ POT FACTOR	0.5484	0.2746	0.5525	0.6683	0.6683	0.6683

Table 3: Azimuth Potentiometer Default Values

PL Potentiometer

	PLATFORM TYPES					
	A1800A/ B/C/D	A1200P	A1200C	A0980B	A0740B	A0660A
PL POT ZERO	205.4144	190.7	197.22	131.79	131.79	131.79
PL POT FACTOR	0.4012	0.3726	0.3852	0.2574	0.2574	0.2574

Table 4: Polarization Potentiometer Default Values

Default Platform Speeds and Limits

	PLATFORM TYPES					
	A1800A/ B	A1200P	A1200C	A0980B	A0740B	A0660A
EL SLOW	6	6	6	4	4	4
EL CURRENT6	7.00	4.5	7.00	7.00	7.00	7.00
EL CURRENT9	12.00	6.5	12.00	12.00	12.00	12.00
AZ SLOW	6	5	6	4	4	4
AZ CURRENT6	7.00	4.0	7.00	7.00	7.00	7.00
AZ CURRENT9	12.00	10.0	12.00	12.00	12.00	12.00
PL SLOW	6	4	6	7	7	7
PL CURRENT6	1.0	1.5	1.0	1.0	1.0	1.0
PL CURRENT9	2.0	2	2.0	2.0	2.0	2.0

Table 5 Default values for speed and current limits

10.2. Appendix 2: LCD Interface Table Summary

Menu	Field	Explanation
MONITOR		
MAIN	E (Angle)	Elevation Angle and Limit Indicators
	A (Angle)	Azimuth Angle and Stow Limit Indicator
	P (Angle)	P (Angle) – Polarization Angle and Stow Limit Indicator
	ST	System Status
	RF (Value)	RF (U/L) – Receive RF Signal Value and Lock/Unlock Status
	GPS and CMPS	GPS Status Flag and Compass Status Flag
	M (SNR) D/E	Modem Signal and Transmitter Status
EL	E (Angle)	Real Time Elevation Angle and Status
	I/S	Real Time Current being drawn from the elevation motor @ the set speed
	S (Value)	Elevation search window limit
	Ad (Value)	Advanced Search Elevation Gap
	O (Value)	Elevation Offset used to obtain an accurate elevation reading
AZ	A (Angle)	Real Time Azimuth Angle and Status
	I/S	Real Time Current drawn from the Azimuth motor @ the set speed
	W (Value)	Azimuth search window limit
	ZF	AZ Pot Zero and AZ Pot Factor for A/D to angle conversions of the AZ axis
PL	P (Angle)	Real Time Polarization Angle and Status
	I/S	Real Time Current drawn from the Polarization motor @ the set speed
	O (Value)	Polarization offset
	ZF	PL Pot Zero and PL Pot Factor for A/D to angle conversions of the PL axis
GPS	GPS (Status)	GPS Status (i.e. Normal, Overridden, or Failure)
	LAT and LONG	Latitudinal and Longitudinal GPS Coordinates
	V (Value)	GPS Velocity – indication of moving vehicle
	H (Value)	GPS Heading
CP	CP (Status)	Compass Status (i.e. Normal, Overridden, or Failure)
	H (Value)	Compass Heading taken after compass has been checked
	CP_EL (Value)	Elevation angle at which the compass reading is taken
	V (Angles)	Compass headings after checking the compass
DVB	FREQUENCY	Transponder Frequency that DVB searches
	SYMBOL RATE	Transponder Symbol Rate that DVB searches
	CODE RATE	Transponder FEC (Code) Rate that DVB searches
	LNB_P	Power supplied to the LNB when searching for target satellite
	Ref Frequency	Reference Satellite Transponder Frequency that DVB searches
	Ref sym rate	Reference Satellite Transponder Symbol Rate that DVB searches
	Ref code rate	Reference Satellite Transponder FEC (Code) Rate that DVB searches
	LNB_P (Ref)	LNB Power supplied to the LNB when searching for reference satellite
SAT	Sat Longitude	Target Satellite Locations Longitudinal Value and Hemisphere
	Ref Sat Longitude	Reference Satellite Longitudinal Value and Hemisphere
	E (Value)	Target Antenna Elevation Value for Satellite acquisition
	A (Value)	Target Antenna Azimuth Value for Satellite acquisition with reference to True North

	P (Value)	Target Antenna Polarization Value for Satellite acquisition
MOD	SQ (Value)	Signal Quality of satellite reception and transmitter status
IP	C_IP (Address)	Controller IP Address
	M_IP (Address)	Modem IP Address
GW	S_IP (Address)	Controller Subnet IP Address
	G_IP (Address)	Controller Gateway IP Address
OPERATION		
FIND	Find Sat	Automatically Find and Lock on to Satellite
STOW	Stow Antenna	Automatically Stow the Antenna
Tx_E	Enable Tx	Enable the Transmitter
Tx_D	Disable Tx	Disable the Transmitter
AZ_C	Calibrate AZ	Calibrate the Azimuth Axis
PL_C	Calibrate PL	Calibrate the Polarization Axis
CP_C	Calibrate CP	Calibrate the Compass
CONFIG		
SAT	Sat Longitude	Target Satellite Locations Longitudinal Value and Hemisphere
	O (Offset)	Target Satellite Offset
	Ref SAT Long	Reference Satellite Option
	Ref O (Offset)	Reference Satellite Offset
MOD	MDM Freq	Modem Receive Frequency
	MDM Sym Rate	Modem Symbol Rate
	TR (T-Pol,R-Pol)	Transmit and Receive Polarization
	H (Hem)	Hemisphere of Modem Operation
DVB	TP Freq	Transponder Frequency for DVB search
	TP Sym Rate	Transponder Symbol Rate for DVB search
	TP Code Rate	Transponder FEC (Code) Rate for DVB search
	Ref TP Freq	Reference Satellite Transponder Frequency for DVB search
	LNB_P	Power supplied to the LNB when searching for target satellite
	Ref TP Sym Rate	Reference Satellite Transponder Symbol Rate for DVB search
	Ref TP Fec Rate	Reference Satellite Transponder FEC (Code) Rate for DVB search (under development)
	LNB_P (Ref)	Power supplied to the LNB when searching for reference satellite
EL	O (Value)	Elevation Offset for proper elevation angle readings
	W (Value)	Elevation Window Limit for satellite searching
	A (Value)	A (Value) – Elevation Adjustment Gap for inclined surfaces
	L (UDS)	Up, Down, and Stow Limits enabling (E) or disabling (D) on the Elevation Axis
	S (Value)	Slow Speed Settings for Elevation Angle Operation
	I (Limits)	Current Limits on EL Axis @ Speed 9 and @ Speed 6
AZ	Z (Value)	AZ Pot Zero for converting A/D value for physical determination of AZ zero angle
	F (Value)	AZ Pot Factor for converting A/D value to an equivalent azimuth angle
	Stow Limit	Stow Limit Enabling (E) or Disabling (D)
	W (Value)	Azimuth Search Window Limit for satellite acquisition
	S (Value)	Slow Speed Setting for Azimuth Axis.
	I (Limits)	Current Limits on AZ Axis @ Speed 9 and @ Speed 6
PL	Z (Value)	PL Pot Zero for converting A/D value for physical determination of PL zero angle
	F (Value)	PL Pot Factor for converting A/D value to an equivalent polarization angle
	Skew/Stow Limit	Skew Adjustment and Stow Limit Enabling (E) or Disabling (D)
	O (Offset)	Polarization Offset
	S (Value)	Slow Speed Setting for Polarization Axis.
	I (Limits)	Current Limits on PL Axis @ Speed 9 and @ Speed 6
G&C	G (Mode)	GPS Setting (Override, Normal)
	GPS Long	GPS Longitudinal Value
	GPS Lat	GPS Latitudinal Value
	C (Mode)	Compass Setting (Override, Normal)
	H (Value)	Compass Heading if the compass is to be overridden

	E (Value)	The angle the compass is set to read from
	O (Value)	Compass Offset
C&P	RF (Mode)	RF Signal Type (Normal, Overridden) and Threshold
	S&P	Searching and Peaking Mode (Find Satellite and Peak on DVB, Modem, or RF)
	DH (DHCP)	Enables or Disables DHCP in the controller
	Beep	Enables or Disables the beeping noise when navigating the LCD Interface
	Platform Type	Setting for the platform type and serial number
	MP	Enables or Disables Motion Protection
RT	R_IP (Address)	Router IP Address (still under C-COM development)
	D_IP (Address)	DNS IP Address (still under C-COM development)
G&S	S_IP (Address)	7000 Controller Subnet IP Address
	G_IP (Address)	7000 Controller Gateway IP Address
IP	C_IP (Address)	Controller IP Address
	M_IP (Address)	Modem IP Address
SR	Service	Service In Use (iDirect, Hughes, Etc.)
	Interface	Modem Communication Interface (i.e. Telnet, HTTP, Console, etc.)
	DEBUG	Debugging Interface (For internal use only)
	Password	Modem Password if necessary
TEST		
E&A&P	E (Range)	Range and speed of start angle to end angle of elevation movement
	P (Range)	Range and speed of start angle to end angle of polarization movement
	A (Range)	Range and speed of start angle to end angle of azimuth movement
	Axis Selection	Selection for Axis to be tested, and test looping option setting
	TST	Initiates the testing on the specified axis and range.
CP	CP	Performs a Check Compass Operation
DPLY	E (Angle)	The target elevation angle for antenna deployment
	P (Angle)	The target polarization angle for antenna deployment
	A (Angle)	The target azimuth angle for antenna deployment
	DPLY	Initiates the deploy command to the specified antenna deployment angles
DPLY_C	E (Angle)	The target elevation angle for antenna deployment and compass reading
	P (Angle)	The target polarization angle for antenna deployment and compass reading
	A (Angle)	The target azimuth angle for antenna deployment and compass reading
	DPLY	DPLY – initiates a compass reading at the specified antenna deployment angles
A_ACP	A_ACP	Initiates an Automatic Cross Pol Test
M_ACP	M_ACP	Initiates a Manual Cross Pol Test
S_ACP	S_ACP	Stops any Cross Pol testing in progress
INFO		
CC1	ID (Value)	States the Controller ID
	HW (Value)	States the Controller Board Hardware Type
	SQ_T (Value)	Signal Quality Threshold for proper Controller SNR Reading
	FBV (FW – BL)	States the Firmware and Boot loader version respectively
CC2	MA (Address)	States the Controller MAC Address
	CONF_ID(Value)	States the Controller Configuration ID (for internal use)
DVB	DVB	States the DVB Mode in Use
MOD	SN (Value)	States the modem Serial Number
	S (Status)	States the status of the modem
	V (Version)	States the Modem Firmware Version
ERR	Error (Code)	Displays error codes if applicable

10.3. Appendix 3: Router Configuration Example